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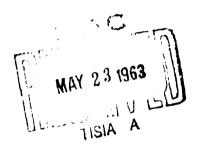


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FLIGHT TEST MEASUREMENT OF LANDING LOADS ON THE A4D-2 AIRPLANE

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Report No. DEV-3616

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#### FLIGHT TEST MEASUREMENT OF LANDING LOADS ON THE A40-2 AIRPLANE

REPORT NO. DEV-3616 DATE: 12-7-62

CONTRACT NOa(s) 59-6226c

DOUGLAS AIRCRAFT COMPANY, INC. AIRCRAFT DIVISION LONG BEACH, CALIFORNIA

DOUGLAS

PREPARED BY:

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#### FLIGHT TEST MEASUREMENT OF LANGING LOADS ON THE A40-2 AIRPLANE

#### SUMMARY

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A Flight Test program was conducted under the direction of the Douglas Aircraft Company at the Naval Air Test Center, Patuxent River, Maryland to obtain landing gear loads and airplane responses associated with field landings under controlled conditions. A total of 209 landings was made by NATC pilots with a Model A40-2 airplane during the period from 8 September 1960 to 2 November 1960 to obtain 29 landings satisfying the desired touchdown conditions. Landings were made at two values of sink speed at each of two different approach speeds on two types of runway surface, dry concrete and concrete coated with approximately one-eighth inch of non-skid deck compound. Landings were also completed at three sink speeds with external fuel tanks installed on the wing pylons. Additional landings were made to obtain unsymmetrical touchdown conditions and others were made to run over a cross-deck pendant with the tires bottomed.

Data are presented in this report in the form of time-history plots for 26 satisfactory landings, since calibration data were found to be invalid for the early landings. The data from the 26 landings were used by the Douglas Aircraft Company to compare with predicted loads (analysis) and drop test loads obtained with the identical instrumentation.

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#### INTRODUCTION AND PURPOSE

A program was established under Contract NOa(s) 59-6226c to measure airplane loads and responses during field landings under controlled conditions and during drop tests simulating the field landings. The results of the field landings and the drop tests were combined with a dynamic analysis to provide a basis for evaluating the adequacy of simulating loads in airplane and jig drop tests and the extent to which those loads might be determined by dynamic analysis. Consistent instrumentation was maintained wherever possible for the tests. The identical instrumentation was used in the majority of applications for the field landings and the drop tests and one of the instrumented main landing gear was one that had been used previously by NASA in their forward velocity landing jig facility. This report presents the results of the field landings performed to obtain the desired touchdown conditions.

The Model A40-2 airplane, BuNo 142089, was used for the flight test program. The airplane was made available at NATC for instrumentation July 1, 1960 and the flight tests were conducted during the period from September 8 to November 2, 1960. The airplane remained under the custody of NATC during the instrumentation period and during the flight test program. Douglas Aircraft Company personnel installed the instrumentation and were responsible for the airborne data and the photoscope tracking data and for the technical aspects and direction of the flight test program. Maintenance and flight operations of the airplane and operation of supporting ground instrumentation were all handled by NATC personnel.

The mirplane was instrumented to measure the following parameters:

#### 1. Main Landing Gear - Left and Right

Vertical, Drag and Side Loads
Strut Position
Strut Velocity
Normal, Longitudinal and Lateral Acceleration of Lower Mass
Normal and Longitudinal Acceleration of Upper Mass
Strut Metering Chamber Pressure
Strut Air Chamber Pressure
Drag Brace Axial Load
Wheel Angular Position

#### 2. Nose Landing Gear

Strut Position Normal Acceleration of Upper Mass

#### 3. Airplane Center of Gravity

Normal Acceleration (High and Low Range)
Longitudinal Acceleration
Pitch and Roll Attitude
Rate of Roll

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#### INTRODUCTION AND PURPOSE (continued)

4. Left and Right Wing Tip

Normal Acceleration

5. Nose Equipment Rack

Normal Acceleration at Forward and Aft End of Rack Normal Acceleration of Aircraft Structure at Forward and Aft End of Rack

6. Left External Fuel Tank - 150 Gallon Tank at Wing Sta. 75.0

Normal and Lateral Acceleration at Tank Sts. 38.0 Longitudinal Acceleration at Center of Gravity, Tank Sts. 76.5 Normal and Lateral Acceleration at Tank Sts. 122.3

7. Right External Fuel Tank - 150 Gallon Tank at Wing Sta. 75.0

Normal and Lateral Acceleration at Tank Sta. 38.0

At the completion of the flight Test program, the instrumentation was removed from the airplane and used during the drop test program.

The purpose of the Flight Test program was to obtain data from the above instrumentation during landings at specified conditions. The specific conditions are given below:

Two symmetrical landings each condition on dry concrete and repeated on non-skid surface with a gross weight of 13,250 lbs and the following conditions of horizontal and vertical speed:

110 knots at 12 and 16 fps 125 knots at 12 and 16 fps

Two symmetrical landings each condition on dry concrete with a gross weight of 14,250 lbs (150 gallon external tanks-full JP-5-installed at Wing Sta. 75), and the fellowing conditions of herizental and vertical speed:

110 knots at 12 and 16 fps 125 knots at 12 and 16 fps

During the program, these conditions were altered to a horizental speed of 135 knots at vertical speeds of 8, 12 and 16 fps.

Three symmetrical cable impact landings at a gross weight of 13,250 lbs and vertical and horizontal speeds between 14-16 fps and 110-125 knots, respectively. Cable impact to be defined as running over a cross dock pendant with the main gear tires fully deflected as a result of the landing impact.

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#### INTRODUCTION AND PURPOSE (continued)

Six asymmetrical landings with 4 to 6 degrees of roll with gross weights between 13,250 to 14,250 lbs, vertical speeds between 12 and 16 fps and horizontal speeds between 110 and 125 knots. The number of landings required was reduced to four during the program.

With the program adjustments noted above, a total of 29 specific landings were required to meet the specified touchdown conditions.

The allowable telerances for each condition were:

Gross Weight ± 500 lbs.
Vertical Speed ± 1 fps
Horizental Speed + 3 knots

The program was terminated November 2, 1960, as reported in Reference 4, when the program support personnel were required for higher priority shipboard projects. All objectives of the flight test program had been achieved at that time except for the pessibility that the tires had not been completely bettemed at the time of rolling over the arresting cable.

This report presents the data obtained during the Flight Test Program. Data obtained during the drop test program are presented in Reference 1. The comparison of these flight test loads and the drop test loads with the theoretical analysis is presented in Reference 2. The NASA test results are presented in Reference 5. A description of the instrumentation used for the flight test and drop test programs is presented in Reference 3.

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#### **EQUIPMENT**

A Model A4D-2 airplane, BuNo 142089, was used to obtain the subject data. Recording instrumentation was carried in a modified 300 gallen tank on the centerline of the airplane. Photographs of the external configuration of the airplane are shown on Pages 8.1.1 and 8.1.2.

Details of the instrumentation are given in the instrumentation report, Reference 3.

Goodyeer main gear tires were used for all landings to provide consistent data. These tires were the same type as those used by NASA with main landing gear No. 10 on their forward velocity jig drop tests.

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PAGE 4.0 MODEL A40-2 REPORT DOV-3616

#### PROCEDURE

The data presented herein were obtained by performing "touch and go landings"; i.e., the airplane touched down and 3 to 5 seconds after touchdown, power was applied and the airplane became airborne. The airplane was flown around the fanding pattern and another touchdown was made. These touch and go landings were performed in series of 5 or 6 landings. The airplane was then refueled and another series of landings was performed.

The landings were performed on Runway 9-27 at the Naval Air Test Center, Patuxent River, Maryland. An aerial view of the landing area showing the supporting ground instrumentation is included on Page 8.1.3. The airplane was maintained and flown by Navy personnel throughout the Flight Test program. Seven different Navy pilots participated in the program.

The required gross weight was obtained by controlling the quantity of internal fuel. A variation of  $\pm$  500 pounds from the desired weight was an accepted tolerance. Each series of landings was started 500 pounds above the desired weight and continued until the weight was 500 pounds less than the desired weight. Page 8.10.1 shows the actual weighing of airplane with all equipment installed and zero fuel. Pages 8.10.2 through 8.10.6 show the weight empty for each group of landings, the grouping determined by changes to the basic weight of the airplane. The fuel quantity system was calibrated prior to the landing program by adding a measured quantity of fuel and reading the pilot's fuel quantity gage. A plot of actual fuel vs indicated fuel, shown on Page 8.10.7 was used to correct indicated fuel readings to actual fuel in the airplane.

The landing approach was performed utilizing the mirror landing system. The mirror angle was adjusted to give the desired vertical sink speed for a given pre-selected horizontal speed. The approach speed was selected, accounting for the wind direction and velocity, to result in the desired horizontal speed.

The landings were performed on two types of surfaces, concrete and non-skid surface. The surfaces were laterally adjacent to each other on the runway.

The left side of the runway remained in the "as is" condition and the right side was coated by Navy personnel with a standard non-skid compound. A sketch of the landing area is shown on Page 8.9.3. The grids painted on each landing surface were utilized in an attempt to measure yawing and skidding velocity at touchdown.

The asymmetric landings were performed to obtain data in a rolled attitude landing condition. A normal approach was made and approximately 20 feet above the ground, the desired roll angle was established and held until ground contact.

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REPORT DEV-3616

#### PROCEDURE (continued)

The cable impact landings were landings during which an attempt was made to run over a 1-3/8 inch cross dack pendant with the main gear tires flattened as a result of the landing impact. An estimate of the distance covered to obtain tire bottoming was used to establish the desired touch—down point prior to the cross dack pendant. The cross dack pendant of the MK 5 arresting gear on Runway 27 was used for these landings. A special pendant with a 1-3/8 inch cable was fabricated for the tosts. The cable was supported on the normal spring steel pendant supports approximately 4 inches above the runway.

For each landing, initial acceptability was determined from TROD! (Touchdown Rate of Descent Indicator) for pertical sink speed, SOD! (Speed Over Deck Indicator) for horizontal speed, and ground observation for symmetry. Photoscope camera coverage was obtained for all landings and was used to determine the actual vertical and horizontal speeds for the satisfactory landings. The oscillograph records were perused as soon as available after the landings for operation of all important perameter transducers. The primary method of determining symmetry was observation of the oscillograph traces measuring drag brace loads of the two main landing gear.

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#### RESULTS AND DISCUSSION

Twenty-nine landings were selected from the total of 209 landings as satisfying the specified conditions. Page 8.2.1 gives these conditions and indicates the landings satisfying each condition. Subsequent to the flight test program calibration data were determined to be invalid to reduce the landing geor vertical and drag loads for Landings 8, 26, 49, 68, and 70. A discussion of this discrepancy appears in the instrumentation Report, Reference 3. Landings 123 and 128 were substituted for those five landings on dry concrete. Page 8.3.1 presents the initial conditions for each satisfactory landing.

The desired touchdown conditions were achieved satisfactorily for all the various test configurations and conditions with the possible exception of the cable impact landings. These cable impact landings were to be made so that the cross deck pendant was run over with the main gear tires fully deflected as a result of the landing impact. A total of 37 landings was made for the purpose of obtaining the cable impact data but instrumentation malfunctions invalidated all but 12 of the landings. Since it was not possible to determine for sure whether the tires were fully bottomed at the time of cable impact for any of these 12 landings, additional cable impact landings would nave been desirable. The flight test program was terminated, as discussed in Reference 4, however, before any additional landings could be obtained.

Pages 8.4.1 through 8.4.84 present the data in engineering units in the form of time-history plots for the 26 landings. These data are presented for those landings that satisfied the required initial conditions. The landing gear vertical and drag loads are plotted as strain gage readings reduced to pounds force perpendicular and parallel to the strut centerline.

Pages 8.5.! through 8.5.13 are time-histories of the landing gear ground reactions for the symmetrical landings of the dry concrete and the non-skid surface. These ground reactions, perpendicular and parallel to the ground, were obtained from struticeds with application of an inertia correction for the gear lower mass. The coefficient of friction was computed from the ratio of drag to vertical ground leads and is presented on these plots.

The oscillograph readings were reduced to strut leads by application of the following equations:

#### Left Geer

Vertical Load = (42,500 + 90.0 S)  $\delta/_{\triangle}$  y + (100.0 + 95.0 S)  $\delta/_{\triangle}$  D Drag Load = (-670 + 110.0 S)  $\delta/_{\triangle}$  y + (4575.0 - 5.0 S)  $\delta/_{\triangle}$  D ADT 88.8 1

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PAGE 5.1 MODEL MD-2 REPORT DOY-3616

#### RESULTS AND DISCUSSION (continued)

#### Right Gear

Vertical Lead = (55495 - 425.4 S)  $\delta/_{\triangle} V$  + (450 + 1103.9 S)  $\delta/_{\triangle} D$ Drag Lead = (42869.9 + 32.8 S)  $\delta/_{\triangle} V$  + (8455.8 + 30.8 S)  $\delta/_{\triangle} D$ 

Where S = strut position of the respective landing gear, inches compressed

 $\delta$  = Channel trace deflection minus trace deflection for zero load.

 $\triangle$  = Calibration plp height obtained from response of channel to a known voltage.

Subscript V = Response of vertical channel

Subscript D = Response of drag channel

The strut loads were reduced to ground leads by application of the following equations:

 $F_{VG} = (F_A + F_{AA}) \cos(\theta - 6 \text{ Deg}) - (F_N + F_{AN})\sin(\theta - 6 \text{ Deg})$ 

 $F_{NG} = (F_N + F_{AN}) \cos(\theta - 6 \text{ Deg}) + (F_A + F_{AA}) \sin(\theta - 6 \text{ Deg})$ 

Where FyG = Vertical ground load, ibs.

 $F_A$  = Vertical strut lead, !bs.

FAA = Inertia ferce parallel to strut centerline, positive down, ibs.

FHG = Horizontal ground load, positive aft, ibs.

 $F_N$  = Drag load (normal to strut) positive aft, ibs.

FAN - Inertia force normal to strut, positive ferward

0 = Pitch attitude, degrees

6 Deg = Angle of strut with airplane vertical axis

Calibration information was not available to obtain side leads as explained in Reference 3. The readings were reduced to  $6/_{\triangle}$  and plotted. All remaining variables were reduced to engineering units by application of a calibration constant. This information is presented in Reference 3.

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#### RESULTS AND DISCUSSION (continued)

The oscillograph traces were read on a Telereader which magnifies the record to double size. The data were read in 0.001 second increments with time zero defined as the time of initial ground contact. The reader produced 827 counts per inch and the value in counts was punched on data cards for use in an IBM 7090 computer program. The output of the computer program was an output tape, a print-out, and punched cards. The output tape was made available to the analysis group and the data were used as a comparison with theory. Results of the comparisons are presented in Reference 2. The punched cards were used to plot the time-histories presented in this report. A Moseley X-Y plotter was utilized for plotting. Time intervals of plotting were 0.001 seconds.

The oscillograph trace of wheel position appeared with a blip every 10 degrees of wheel travel. Wheel position was plotted versus time. The slope of this plot gives the angular velocity at a given time. The values for velocity in radians per second are plotted versus time and these plots are included as Pages 8.7.1 through 8.7.18. This method of obtaining wheel spin-up is subject to error although the spin-up trend and final wheel speed are considered reasonably accurate.

Page 8.3.1 presents the initial conditions for each of the satisfactory landings. Runway angle was determined by physically measuring the angle at the point of touchdown. A general survey of the lending area was made previous to the landings; however, the survey did not account for irregularities in the runway surface such as tar expansion joints. The survey data are included on Pages 8.9.1 through 8.9.4 for information. The wing lift values presented on Page 8.3.1 were computed from the oscillograph traces of longitudinal and normal acceleration perpendicular and parallel to the fuselage reference line near the airplane center of graylty. The data were resolved perpendicular to the runway surface and presented as wing lift. Sink speeds and horizontal speeds were obtained from the photoscope camera. The photoscope camera is a 35MM space-positioning camera running at a precise frame rate. A detailed description of the camera is given in the instrumentation Report, Reference 3. The geometric relationships between the airplane flight path, the horizontal plane, the runway, and the photoscope camera are shown on Pages 8.8.60 and 8.8.61. The airplane vertical and nonizontal distances from the reference planes were calculated using the azimuth and ejevation angles from the film records of the photoscope camera tracking each landing.

Several individuals read the 35MM photoscope camera film and followed the prescribed procedure to obtain vertical and horizontal distances as a function of time. Each person plotted these data and faired a line through the points with the slope of the line representing the speed. These values are presented on Page 8.8.1. The worksheets from which the values were obtained are included on Pages 8.8.2 through 8.8.59.

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#### RESULTS AND DISCUSSION (continued)

The final value of vertical and horizontal speed is the arithmetic average of the values obtained by the various individuals. The maximum standard deviation of the average horizontal speed was 0.67 fps and the average standard deviation of the horizontal speed was 0.29 fps. The maximum standard deviation of the average vertical speed was 0.48 fps and the average standard deviation of the vertical speed was 0.44 fps.

The horizontal speed of the simplane was easily obtained since the speed was constant resulting in a straight line fit of the data. The vertical speed of the airplane was more difficult to obtain because the vertical speed was not constant during the latter portion of the descent. An attempt was made to obtain the vertical speed of the airplane by fitting a polynomial curve to the data. The results obtained in this manner were questionable as indicated by the large deviations (± 1 ft./sec.) resulting from varying several arbitrary or undefined factors; namely, (1) the number of data points included in determining the equation; (2) the degree of the equation selected to fit the data; and (3), the time of touchdown. Item (1) is an arbitrary decision as to whether to consider the last 5-6 feet of descent or the last 20 feet of descent; Item. (2) is also an arbitrary decision chosen by examination; and (3), the time of touchdown could not be precisely defined.

The final procedure used to obtain vertical speed was a straight line fairing through the points representing the last 6-8 feet of descent. This method permitted weighting the individual points and eliminating the questionable points. This method is also not as dependent on an exact time of touchdown as a polynomial curve fit.

The photoscope data resulted in vertical and horizontal speeds perpendicular and parallel to a horizontal plane. The speeds were resolved perpendicular and parallel to the runway, as indicated on Page 8.8.61, and are tabulated with the other initial, or touchdown, conditions on Page 8.3.1.

Pages 8.6.1 through 8.6.13 present observed field data for all landings. The wind direction quoted on these pages is the true compass heading from which the wind originated. Wheel touchdown points were determined by observing tire skid marks after each landing. TRODI readings were corrected for calibration error when available.

Landing gear strut and tire pressure information are included on Pages 8.11.1 and 8.11.2.

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#### RESULTS AND DISCUSSION (continued)

The pressures were read prior to operations each day and the values recorded on Pages 8.11.1 and 8.11.2 are the pressures that existed at this time. In most instances, the pressure level was then established at the required value. The required pressures in pounds per square inch are as follows:

Nose gear fire 250

Nose gear strut 210 @ full extension

Main gear tire 320

Main gear strut 25 @ full extension

All pressures for the satisfactory landings were the required value.

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#### CONCLUSIONS

The flight test phase of the Landing Loads investigation was completed satisfactority. From a total of 209 landings performed at NATC with an A40-2 simplane, 29 landings were obtained which satisfied the initial, or touchdown conditions. Calibration data for the main landing gear were subsequently determined to be invelid for some of the initial landings and data could be presented for only 26 satisfactory landings. All of the objectives of the flight test program were achieved satisfactorily with the possible exception that the cable impact landings may not have resulted in complete tire bottoming at the time of running over the cross deck pendant.

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#### REFERENCES

- Douglas Aircraft Company Report No. ES-40641, "Landing Loads Investigation Laboratory Drop Tests", dated September, 1962.
- Douglas Aircraft Cempany Report No. LB-31038, "An Investigation of the Landing Loads Experienced by the A4D-2 Airplane During Flight Tests and Drop Tests and a Comparison with Theory", dated October, 1962.
- Douglas Aircraft Company Report No. ES-40636, "Landing Loads investigation instrumentation", dated 26 October 1962.
- Douglas Aircraft Company Letter B-25-4178, "Contract NOa(s) 59-6226c - Landing Loads Investigation", dated 15 December 1960.
- 5. NASA Report TN D-214, "Experimental Investigation of Spin-up Friction Coefficients on Concrete and Non-Skid Carrier Deck Surfaces", dated April 1960.

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LANDING"LOADS INVESTIGATION

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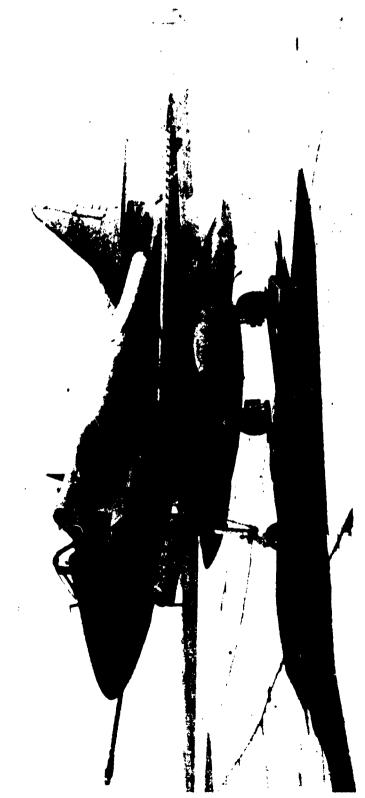
LANDING LOADS INVESTIGATION

MODEL: A4D-2

PERMIT NO DEV-36/6



MODEL A4D-2 AIRPLANE BUNO 142089 WITH CENTERLINE INSTRUMENTATION STORE AND TWO 150 GAL. EXTERNAL FUEL TANKS INSTALLED





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DOUGLAS AIRCRAFT COMPANY, INC. PREPARED BY PAGE 8.1.3 DIVISION MODEL A4D-2 REPORT NO. DEV-3616 E-CONCRETE LANDING AREA F-NON-SKID LANDING AREA G-CABLE IMPACT LANDING A-PHOTOSCOPE CAMERA
B-MITCHELL CAMERA
C-SODI
D-SOURCE LIGHTS FOR MIRROR

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## LANDING LOADS INVESTIGATION A4D-2 Buno 142089

#### CONDITIONS REQUIRED FOR ACCEPTABILITY OF LANDINGS

"Vo	landings.	each	condition
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		Condition						
Gross Weigh Lbs. (±500)	Symmetrical	Roll & Deg(±1)	V <sub>1</sub>	V <sub>B</sub> FPS (±1)	Landing Surface	Letter	Satisfy Conditi	
13250*	yes	0	110	12	Concrete	Α.	126	49_
13250	yes	O	125	12	Concrete	В	8	29 <u> </u>
13250	yes	0	110	16	Concrete	С	121	125
13250	уев	1 0	125	16	Concrete	D	69	0
13250	yes	0	110	12	Non-skid	E	113	120
13250	yes	0	125	12	Non-skid	F	131	133
13250	yes	0	110	16	Non-skid	G	114	117
13250	yes	0	125	16	Non-skid	н	93	95
14250##	yes	ု ၁	# 110(135)	1 12 8	Concrete	I	146	151
14250	yes	. 0	#125(135)		Concrete	J	150	153
14250	yes	0	± <del>110</del> (135)		Concrete	ĸ	52	155
14250		<del></del>	125	16-	Concrete	L	Delete	#

Three(3)	Landings-	Running	over	Arresting	Cable	with	Tire	Bottomed
TITL GE ()	TOTAL TITES -	111411111111111111111111111111111111111	0 167	All I Courting	CAULE	m F 011	X X I C	Doodoucu

13250	yes	0	110-125	14-16	Optional	М	179	188	190
	<u></u>								
	≠ F	our 81×	6) Unsymme	trical 1	Landings				#
13250-	1 00	4-6	110-125	12-16	Optional	11	167	158 171	X

- \* Instrumentation Store, No External Fiel Tanks
- \*\* Instrumentation Store, Two(2) 150 Gallon External Tanks-Full JP-5

Vn Horizontal Speed in Knots

114.11

Vs Sink Speed in Feet/Second

- # Altered and deleted at the discretion of the cognizant BuWeps Engineer.
- Landings not used due to lack of calibration data.

Landings 123 and 128 substituted for these fandings.

... INIT

		_	_				-	THE OWNER THE	AND PERSONS ASSESSED.	THE PERSON NAMED IN	-
	GROSS WEIGHT	CEN' OI GRAV	F	PITCH ATTITUDE	ROLL ATTITUDE	ROLL RATE		RUNWAY ANGLE	FLIGHT PATH	WING LIFT	
-		GIOAV	LTI		-	-		ļ			SI
LANDING NUMBER	LBS	SIA	9.MAC	DEG	DEG	DEC/SE	<u> </u>	DEC	DEG	G!S	FPS
MUMDEN	PREERENCE	PLANE		FRL	FRL	FRL		HORIZ	HORIZ	NUNWAY	HORIZ
8	13516	234.5		10.5	0.36 RWD	0.33	R	0.4B	2.9	1.10	11.0
26	13186	233.6		10.8	NO DATA	0.30	L	0.5	3.2	1.09	11.4
49	12776	232.7		15.5	ATAC OK	0.31	L	0.4	3.4	1.07	11.0
68	13226	233.7	23.4	6.0	NO DATA	0.31	L	0.5	4.1	1.10	15.7
70	12876	232.9	22.8	6.8	NO DATA	2.49	R	0.3	4.0	1.09	14.6
121	12876	232.9	8.55	13.2	NO DATA	0.89	R	0.2	4.0	1.10	12.5
123	13735	235.2	24.6	8.5	NO DATA	0.02	R	0.4	3.2	1.10	10.7
125	13446	234.3	23.8	9.8	NO DATA	1.02	R	0.3	4.2	1.07	13.9
126	13276	233.9	23.5	9.8	NO DATA	NO DA	r <b>a</b>	0.5	4.7	1.06	15.5
128	<b>127</b> 75	232.7	22.6	10.5	NO DATA	0.00		0.4	4.2	1.00	13.4
93	13600	235.1	24.5	0.9	0.56 RWD	2.12	L	0.4	4.0	1.14	15.3
95	13270	234.3	23.8	7.0	0.46 RWD	0.24	L	0.5	3.9	1.04	14.7
113	12870	233.3	23.1	<b>3.2</b>	2.72 LWD	1.90	L	0.4	3.6	0.97	11.9
114	13660	235.2	24.6	10.5	1.41 LWD	3.22	R	0.5	3.9	1.04	15.8
117	13080	233.9	23.5	11.0	1.79 LWD	5.90	L	0.5	4.9	1.14	15.8
120	13080	233.9	23.5	11.0	NO DATA	1.77	R	0.5	3.5	1.08	12.0
131	13360	234.6	24.1	9.0	1.39 RWD	1.53	R	0.4	3.2	1.06	12.0
133	12970	233.6	23.3	8.0	0.72 RWD	1.84	R	0.4	3.3	1.06	12.5
146	13955	234.7	24.2	11.0	1.93 RWD	2.19	L	0.4	2.4	1.09	9.4
150	14135	233.6	23.3	8.9	2.15 RWD	0.45	L	0.4	3.4	1.04	12.0
151	13895	235.0	24.4	9.9	1.52 RWD	3.43	L	0.4	2.5	1.07	10.1
152	14985	233.3	23.1	8.3	0.22 RWD	1.83	L	0.3	4.2	1.09	16.9
153	14415	232.2	22.3	9.3	2.00 RWD	2.74	L	0.1	3.5	1.06	13.9
155	14195	233.3	23.1	8.9	0.88 LWD	3.17	L	0.3	3.8	1.10	14.8
179	13775	235.0	24.4	11.4	1.35 RWD	0.09	L	NO DATA	NO DATA	L.05	NO DAT
188	13285	233.9		10.0	0.42 RWD	0.18	L	NO DATA	NO DATA	1.06	NO DAT
190	12785	232.7	22.6	11.3	0.42 RWD	0.00		NO DATA	NO DATA	1.12	NO DAT
167	13675	234.7	24.2	13.3	5.60 RWD	1.72	R	0.3	3.5	1.14	12.7
168	13535	234.5		13.5	7.30 RWD	4.10	R	0.3	2.7	1.08	10.0
170	13195	233.6	23.3	12.9	10.10 RWD	4.76	L	0.5	3.2	1.07	12.4
171	12985	233.2	23.0	9.8	8.80 RWD	2.16	R	0.3	3.1	1.01	11.7
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TESTING

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. A4D-2

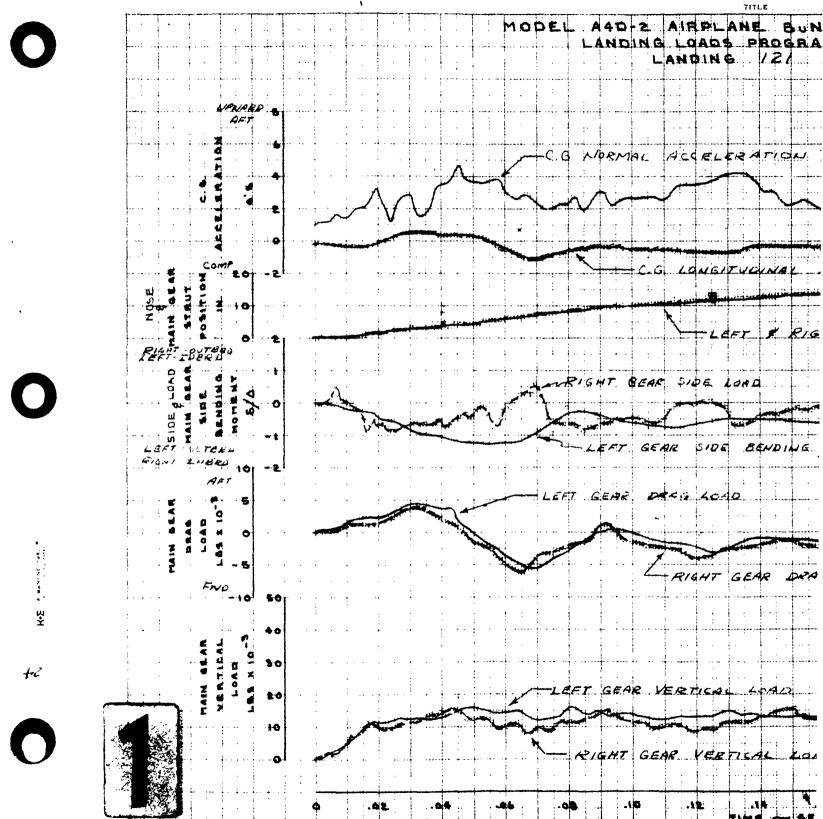
INITIAL CONDITIONS FOR SATISFACTORY LANDINGS

PREPARES BY

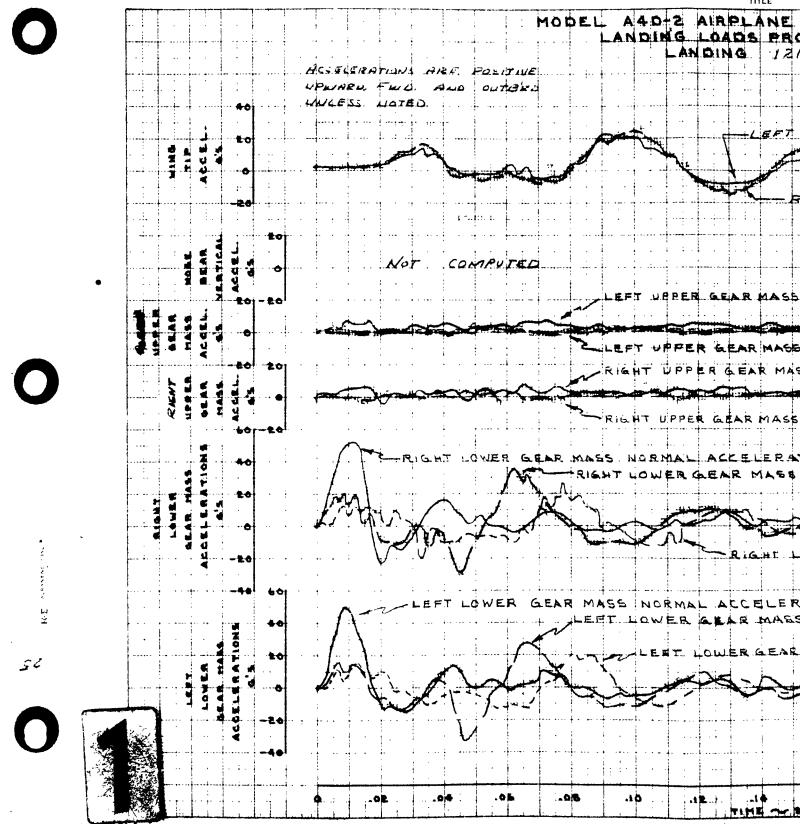
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DEV-3616

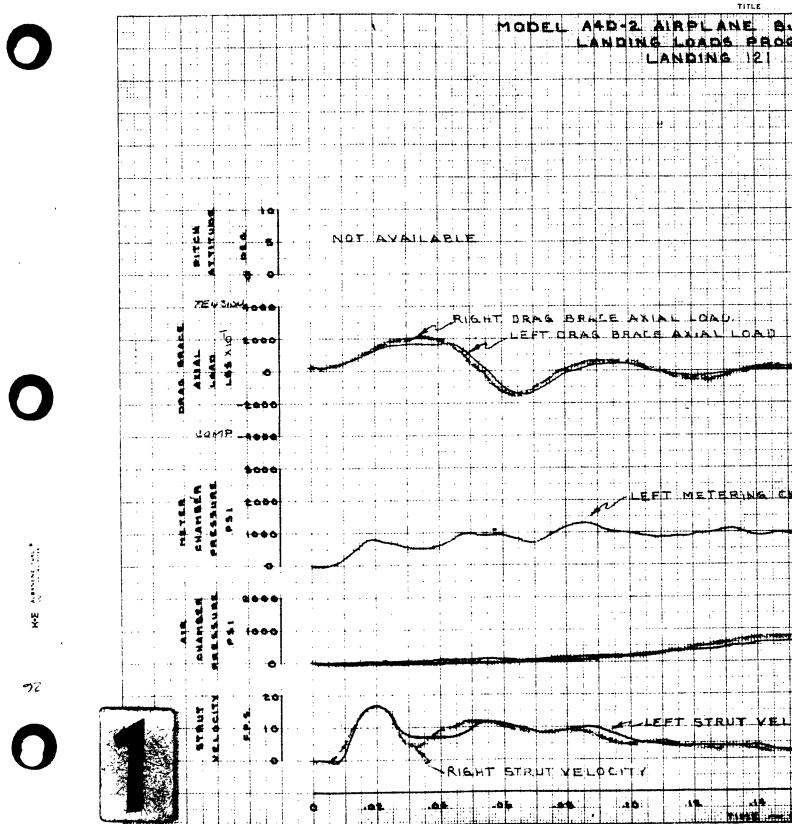
L E	RUNWAY ANGLE		FLIGHT PATH	WING LIFT		PHOTOSCO	OPE CAMERA DA	ATA		-	
					SIMK	SPEED	ног	RIZONTAL SPEE	ED .	RUNWAY	
EC		DEC	DEC	g!s	FPS	rPS	FPS	FP6	KTS	SURFACE	TIME HISTORY
		HORIZ	HORIZ	RUNWAY	HORIL	RUNWAY	HORIZ	RUNWAY	RUNWAY	CONLI MON	PAGE NUMBER
	R	0.4B	2.9	1.10	11.0	11.7	216.0	215.9	127.9	CONCRETE	
	L	0.5	3.2	1.09	11.4	13.4	206.9	206.6	122.4	"	
	L	0.4	3.4	1.07	11.0	12.3	185.0	184.3	109.5	"	
	L	0.5	4.1	1.10	15.7	17.5	217.9	217.6	128.9	**	
]	R	0.3	4.0	1.09	14.6	15.9	211.0	210.6	124.8	п	
	R	0.2	4.0	1.10	12.5	13.2	179.2	179.1	106.1	"	8.4.1 To 8.4
	R	0.4	3.2	1.10	10.7	12.0	192.4	192.0	113.9	11	8.4.79 8.4.
	R	0.3	4.2	1.07	13.9	15.0	191.0	130.6	112.9	"	8.4.4 To 8.4
TA	-	0.5	4.7	1.06	15.5	17.0	137.0	186.7	110.6	"	8.4.7 To 8.4
	-+	0.4	4.2	1.00	13.4	14.7	183.8	183.3	108.8	"	8.4.82 Tg.4
	L	0.4	4.0	1.14	15.3	16.1	221.4	221.3	131.1	NON-SKID	8.4.10 16
	L	0.5	3.9	1.04	14.7	16.6	217.3	217.2	128.7	<b>+</b>	8.4.13 Tg.4.
	L	0.4	3.6	0.97	11.9	13.2	191.1	191.0	113.2	"	8.4.16 28 8.4.
	R	0.5	3.9	1.04	15.8	17.4	186.3	136.2	110.3	-	3.4.19 16 8.4.
	L	0.5	4.9	1.14	15.8	17.4	186.0	185.9	110.1	<del>                                     </del>	3.4.22 10
	R	0.5	3.5	1.08	12.0	13.6	187.0	186.9	110.7	-	8/4/25 18.4
	R	0.4	3.2	1.06	12.0	13.5	216.0	215.9	127.9	•	8.4.28 16
	R	0.4	3.3	1.06	12.5	14.0	217.0	216.9	128.5	11	8.4.31 10
	L	0.4	2.4	1.09	9.4	11.0	225.3	225.2	133.3	CONCRETE	C.4.34 10
	L	0.4	3.4	1.04	12.0	13.6	226.0	225.9	133.7	EXT. TANKS	8.4.38 16
	L	0.4	2.5	1.07	10.1	11.7	227.0	226.9	134.3	<del>                                     </del>	8.4.42 16
	L	0.3	4.2	1.09	16.9	18.1	230.3	230.2	136.3	-	8.4.46 10.4
			<del></del>	1.06	13.9	14.3	227.0	227.0	134.4	<del>-</del> <del>-</del> <del>-</del> <del>-</del> <del>-</del> -	8.4.50 10
	L L	0.1	3.5	1.10	14.8	16.0	225.5	225.4	133.4	<del></del>	8/4.54 TO 8.4
	-	NO DATA	<del></del>			18.0*	NO DATA	NO DATA	128.0*	CABLE	T 27 8 3 5 2 15
	L	NO DATA	NO DATA	1.05	NO DATA	15.0*	NO DATA	NO DATA	126.0*	IMPACT	8.4.61 10
	٠,	NO DATA	NO DATA		NO DATA	16.0#	NO DATA	NO DATA	129.0*		8.4.64 16
			<del></del>	1.12			209.0	208.9	123.7	ASYMMETRIC	8.4.67 To
	R	0.3	3.5	1.14	12.7	13.8		209.4	124.0	ASIPAGINIC	8.4.70 To
	R	0.3	2.7	1.08	10.0	11.1	209.5	220.4	130.5		8.4 8.4 8.4
	L	0.5	3.2	1.07	12.4	14.3					8.4.76 Tg
	R	0.3	3.1	1.01	11.7	12.8	217.5	217.4	128.7		8.4



DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8,41 CHECKED BY PHILART MODEL: A4R-2 DIVISION DATE REPORT NO DEV-3616 SHEET I OF 3 BUND 142089 LANDING LOADS PROGRAM ANDING GEAR HOADS ARE STRAIN LANDING /Z/ GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE ACCELER ATTICK LONGITUCINAL ACCELERATION LAFT & PIGHT STRUT POSITION WRIGHT BEAR SIDE LOAD BENDING MOMENT LEFT GEAR SIDE - LEFT GEAR DAKE 4040 RIGHT GEAR DEAG LOAD BET GEAR VERTICAL LOAD RIGHT GEAR VERTICAL LOAD

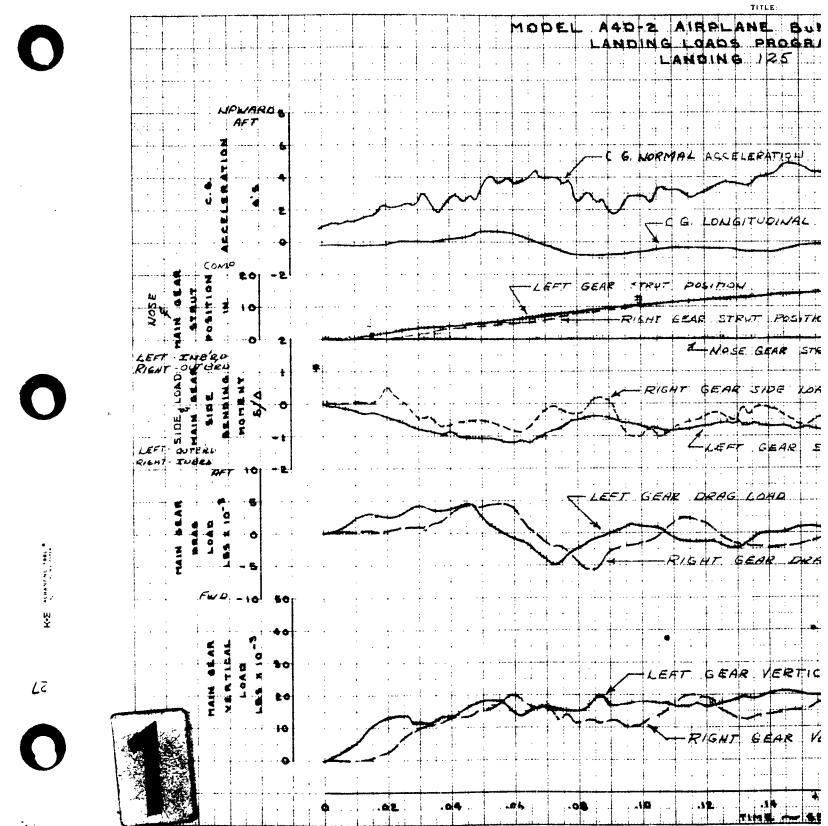


DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8.4.2 PREPARED BY: CHECKED BY TESTING DIVISION MODEL. A4D-2 DATE PEPORT NO DEV - 3216 TITLE SHEET 2 OF 3 MODEL A40+2 AIRPLANE BUNG 142089 LANDING LOADS PROGRAM LANDING 12/ LEFT WING TIN WORMAL ACCELERATION BIGHT WING TIP NORMAL ACCELERATION FT UBPER GEAR MASS NORMAL ACCELERATION ... LILEFT UPPER WEAR MASS LONGITUDINAL ACCELERATION RIGHT UPPER GEAR MASS NORMAL ACCELERATION RIGHT UPPER GEAR MASS LONGITUDINAL ACCELERATION. LEAR MASS NORMAL ACKELERATION RIGHT LOWER GEAR MASS LONG! TUD! NAL ACCELERATION. RIGHT LOWER GEAR MASS LATERAL ACCELERATION GEAR MASS INCRMAL ACCELERATION. LEET LOWER GEAR MASS LONG IT UDINAL ACGELERATION OWER GEAR MASS LATERAL ACCELERATION



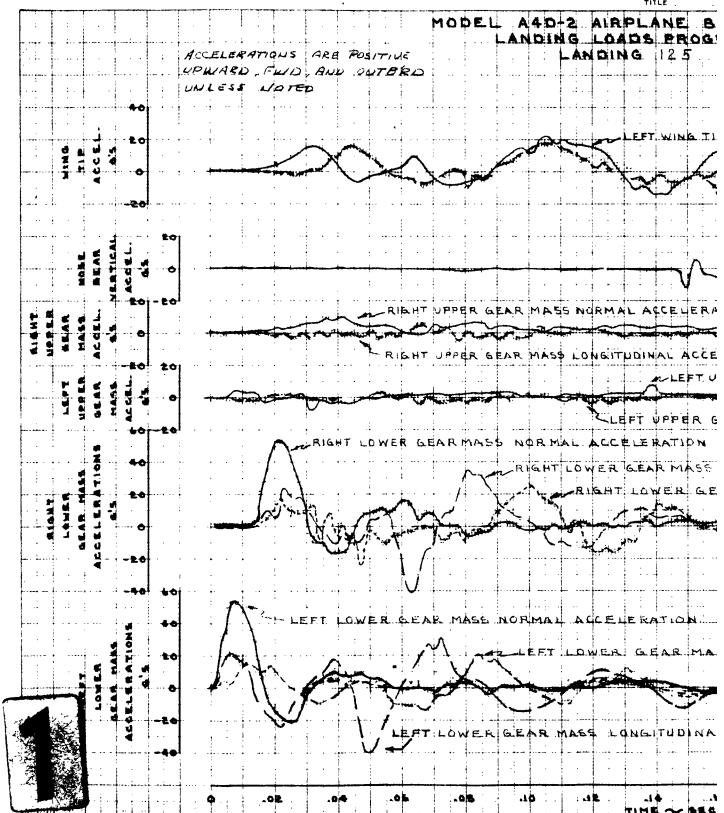
6.4

DOUGLAS AIRCRAFT COMPANY, INC. PREPARED BY CHECKED BY TESTING ... DIVISION A4D-2 MODEL REPORT NO DEV-3616 SHEET 3 OF B LANDING 121 DRAG BRACE AXIAL LOAD: EFT DRAS BRACE AXIAL LOAD FET METERING CHAMBER PRESSURE LEFT STRUT VELOCITY TRUT YELDOMY



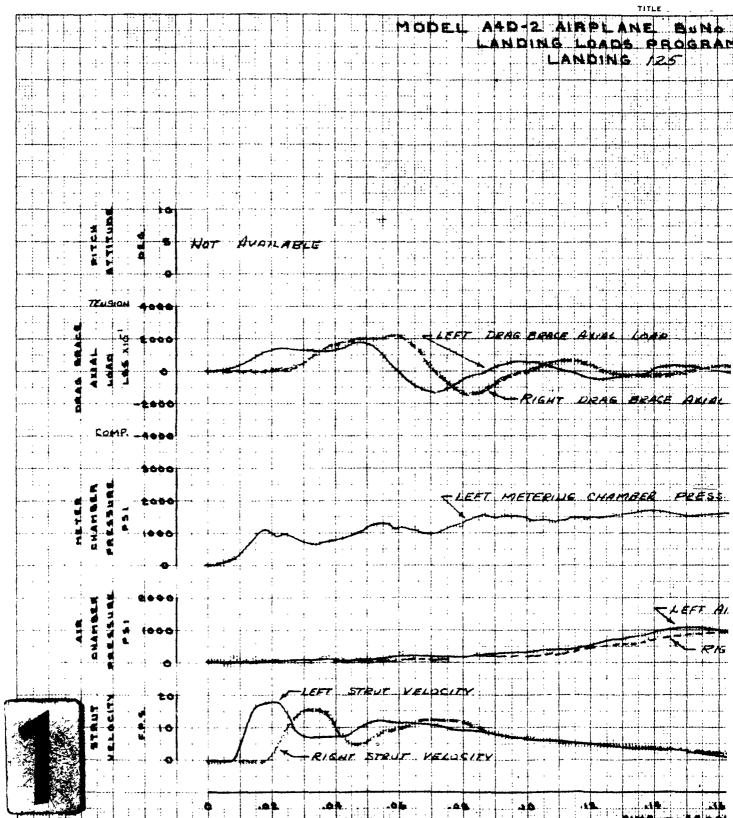
PAGE: 8.4.4 CHECKED BY TESTING. DIVISION MODEL ASP-2 REPORT NO. DEV 36/6 TITLE SHERT | OF 3 A4D-2 AIRPLANE BUND 142089 LANDING LOADS PROGRAM LANDING BEAR LOADS ARE STRAIN LANDING 125 GAGE LONDS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE 6. NORMAL ACCELERATION : C.G. LONGITUDINAL ACCELERATION EFT GEAR STRUT POSITION RIGHT GEAR STRUT POSITION NOSE GEAR STRUT POSITION : RIGHT GEAR SIDE YOAD WEFT GEAR SIDE BEHDING MOMENT LEFT GEAR DRAG LOAD RIGHT GEAR DWAG LOAD LEAT GEAR VERTICAL LOAD -RIGHT GEAR VERTICAL LOAD .12

DOUGLAS AIRCRAFT COMPANY, INC.

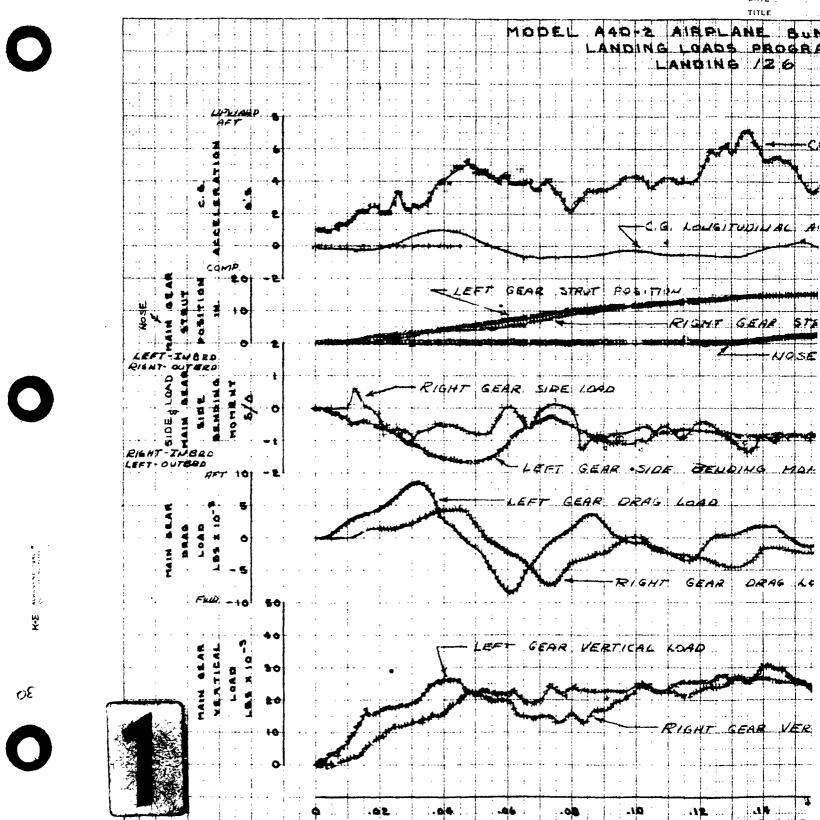


DOUGLAS AIRCRAFT COMPANY, INC. PREPARED BY TESTING. ... DIVISION DATE A4D-2 AIRPLANE BUNG 142089 LANDING LOADS PROGRAM LANDING 125 LEFT WING TIP NORMAL ACCELERATION RIGHT, WINE TIP WORMAL ACCELERATION. IUPPER GEAR MASS NORMAL ACCELERATION T UPPER GEAR MASS LONGITUDINAL ACCELERATION WLEFT UPPER GEAR MASS NORMAL LEFT UPPER GEAR MASS LONGITUDINAL ACCELERATION LEAR MASS NOR MAL ACCELERATION RIGHT LOWER GEAR MASS LONGITUDINAL ACCELERATION. RIGHT LOWER GEAR MASS LATERAL ACLELERATION AR MASS NORMAL ACCELERATION

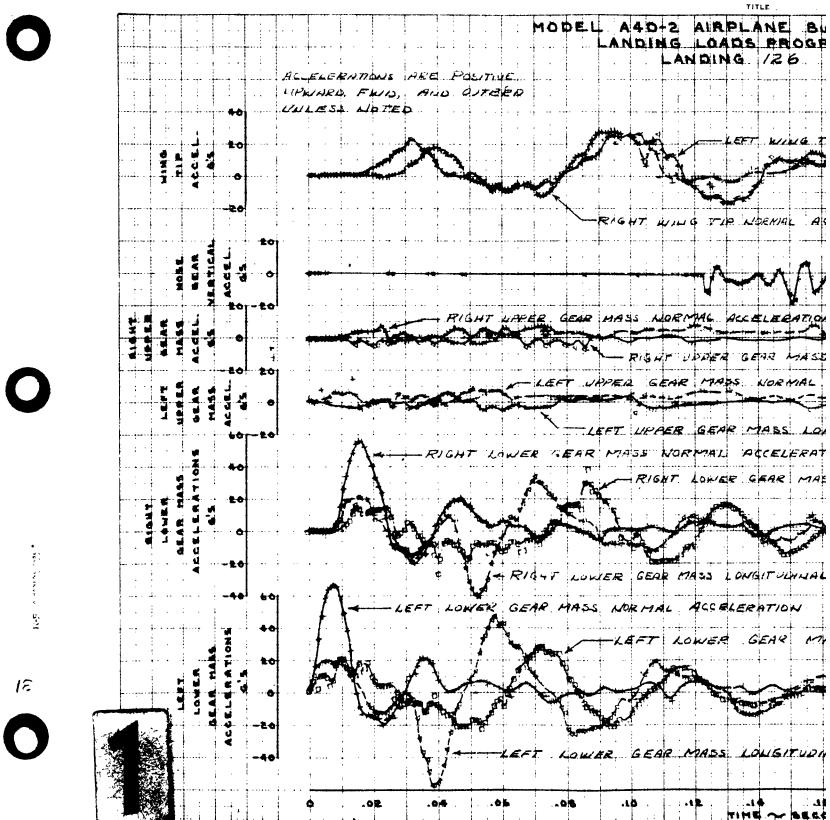




DOUGLAS AIRCRAFT COMPANY, INC. PREPARED BY: PAGE: 8.4.6 CHECKED BY TESTING ..... DIVISION MODEL: A4D-2 REPORT NO. DEV- 3616 SHEET S OF S AHD-2 AIRPLANE BUNG 142084 LANDING LOADS PROGRAM EFT DRAG BRACE ANDE RIGHT DRAG BRACE ANIBL LOAD LEFT METERINE CHAMBER -LEFT AIR CHAMBER PRESS. RASAT MIR CHAMBER VELUSIEY.

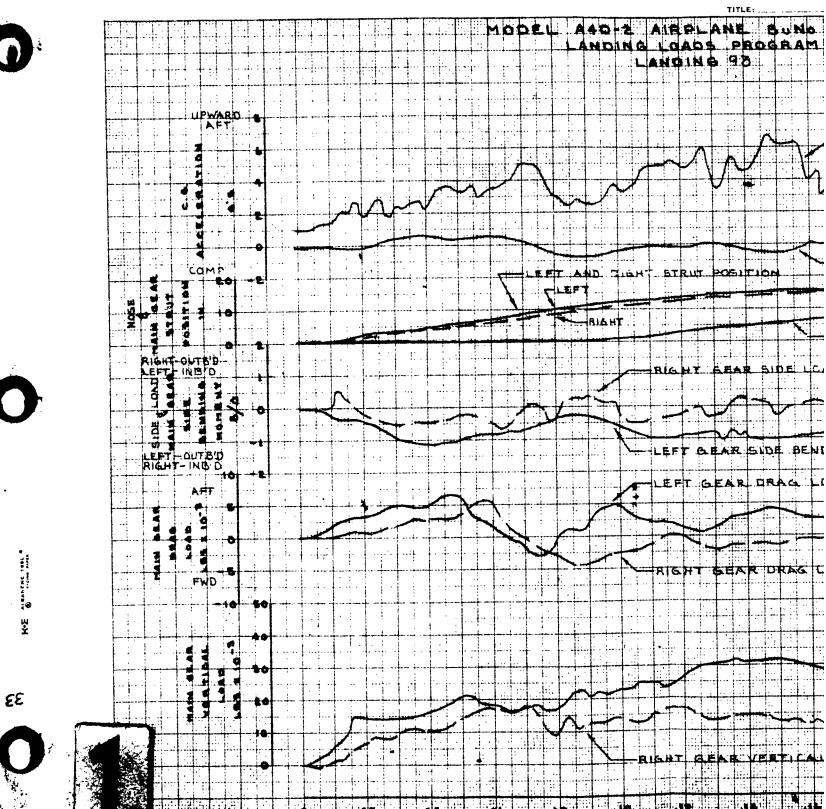


DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8.4.7 PREPARED BY TESTINO DIVISION MODEL AAR-2 DATE REPORT NO. DEV-3616 SHEET ! OF 3 A4D-2 AIRPLANE BUNG 142089 LANDING LOADS PROGRAM ANDING GEAR LOADS ARE STRAIN LANDING /26 GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE HECELE PATTOM NORMAL. C.G. LOWELTUDINIAL ACKELERATION. AR STRUT FREITHA RIGHT GEAR STRUT POSITION NOSE GEAR STRIT POSITION SIRE LOAD LEFT GERR SIDE GENDING MONEUT FT GEAR DRAG LOAD RIGHT GEAR DRAG LOAD. GEAR VERTICAL KOAD RIGHT GEAR VERTICAL LOAD



DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8.4.8 . TESTING \_\_\_ DIVISION MODEL A4D-2 DATE REPORT NO DEV 36 2 TITLE MODEL A40+2 AIRPLANE BUNG 142089 LANDING LOADS PROGRAM LANDING /26 EFT WING TIP MORMAL ACCELERATION RIGHT WILLS THE NORMAL ACCRECERATION WER GEAR MASS MORMAG ACCELERATION RISHIP UNDER GEAR MASE LONGITUDINAL LEFT UPPER GEAR MADS KORMAL ACCECERATION LEFT UPPER GEAR MASS LONGITUDINAL ACCELERATION IER GEAR MASS WORMALL ACCELERATION RIGHT LOWER GEAR MASS LATERAL ACCELERATION. PIATT LOWER GEAR MASS LONGITULINAL ACCELERATION. EAR MASS MORMAL ACCELERATION LEFT! LOWER GEAR MASS LATERAL ACCELERATION ET LOWER GEAR MASS LOLIGITUDINAL ACCELERATION ..08

DOUGLAS AIRCRAFT COMPANY, INC. PREPARED BY CHECKED BY TEBTING MODEL A4D-2 DIVISION REPORT NO .: DEV- 3616 SHEET 3 OF 5 ANDING LOADS PROGRAM LANDING 124 AG ERACE AXIAL LOAD T CILA TRUT MELOCYT

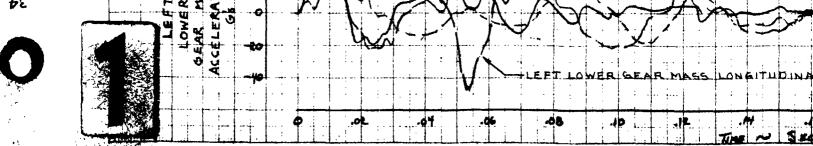


DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8.4.10 % CHECKED BY: \_ \_\_\_\_ TERTING DIVISION MODEL \_\_ A.4D-2\_\_ REPORT NO. DEV-3616 TITLE: ... SHEET ! OF B LANDING GEAR LOADS ARE STRAIN NOING LOADS PROGRAM LANDING 98 GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE EIGILIBHIGHTUDINAL ACCELERATION RIGHT NOSE STRUT POSITION LEFT BEAR SIDE BENDING MOMENT LEFT GEAR DRAG LOAD BEAR DRAG LOAD

A4D-2 ARPLANE BU.I ANDING LOADS PROGRA LANDING 73 MODEL UPWARD , FORWARD , AND QUIE'D UNLESS NOTE

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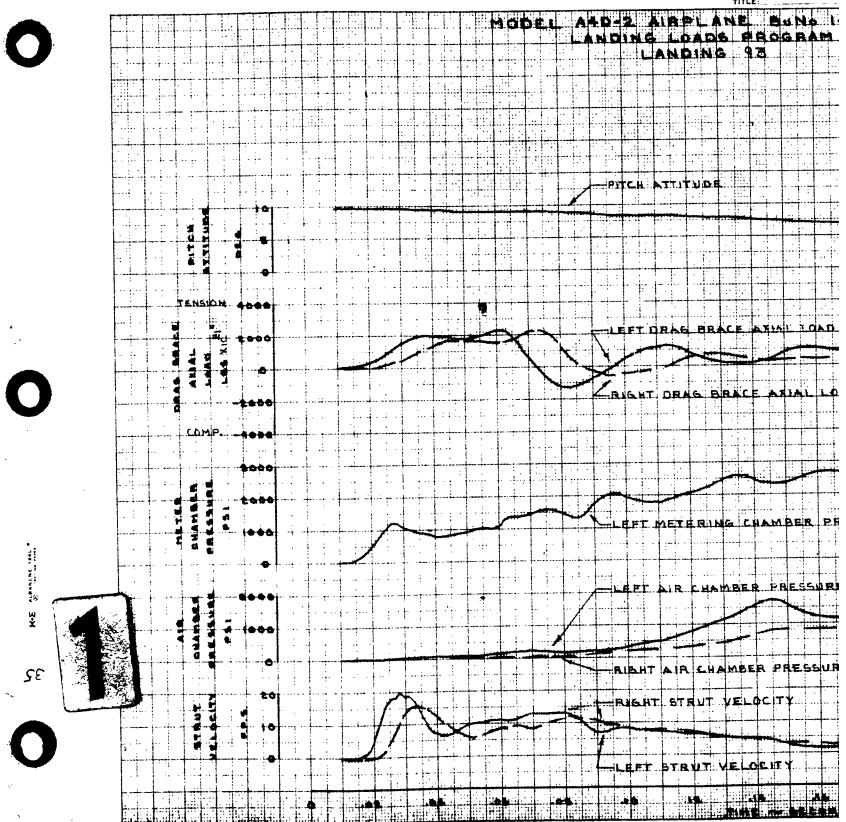


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						JAT.	E.,														REPORT		DEV- 3	1616
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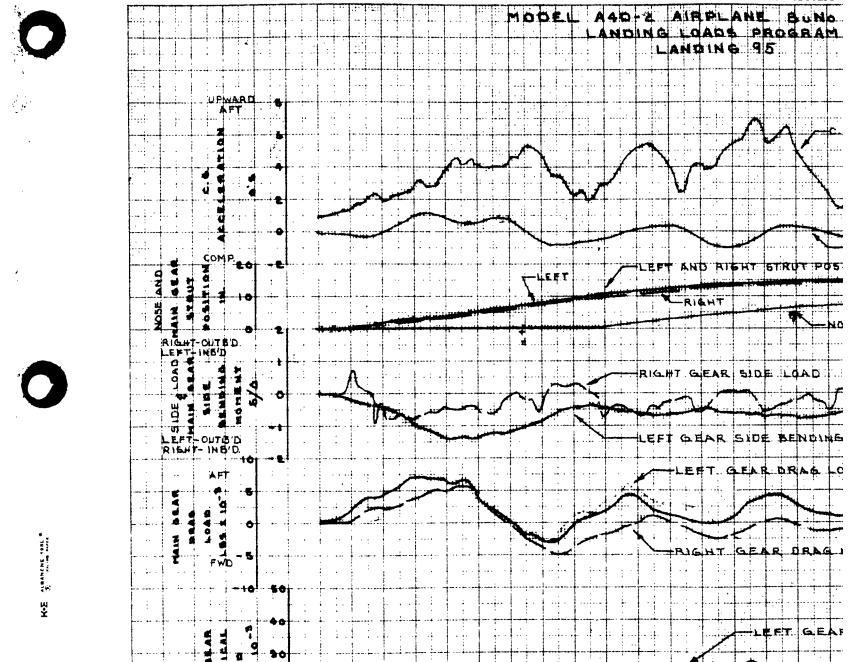
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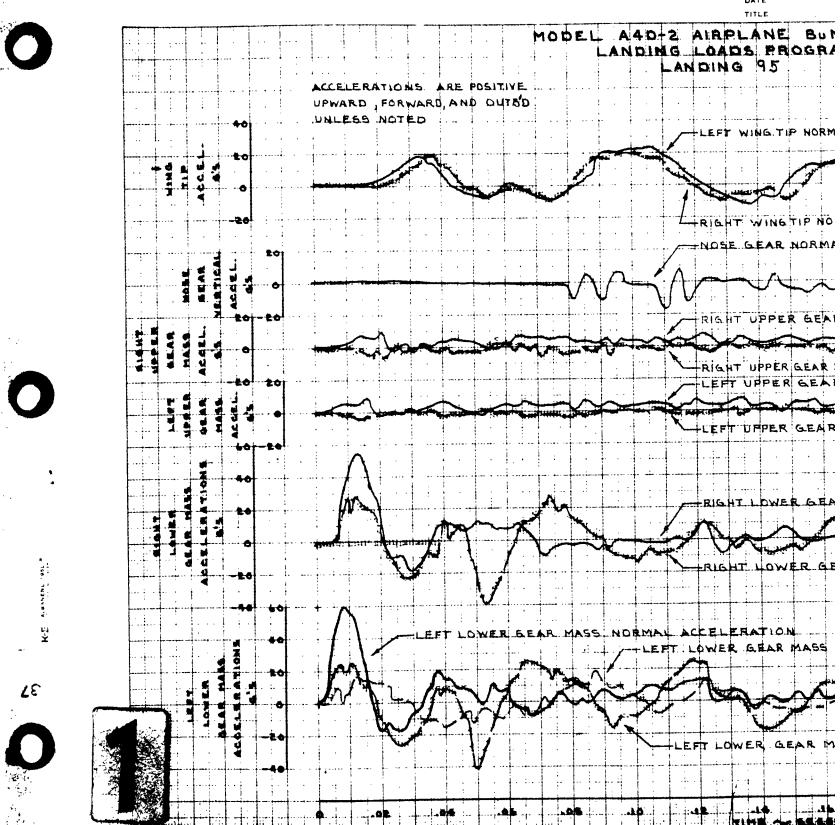
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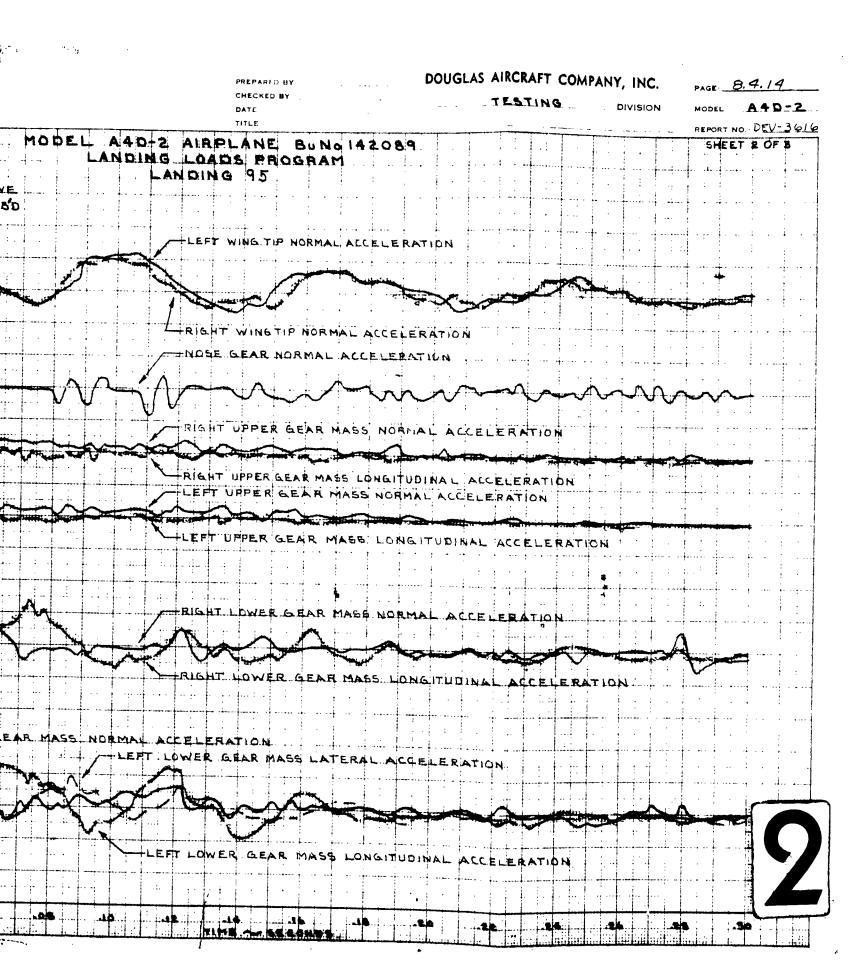


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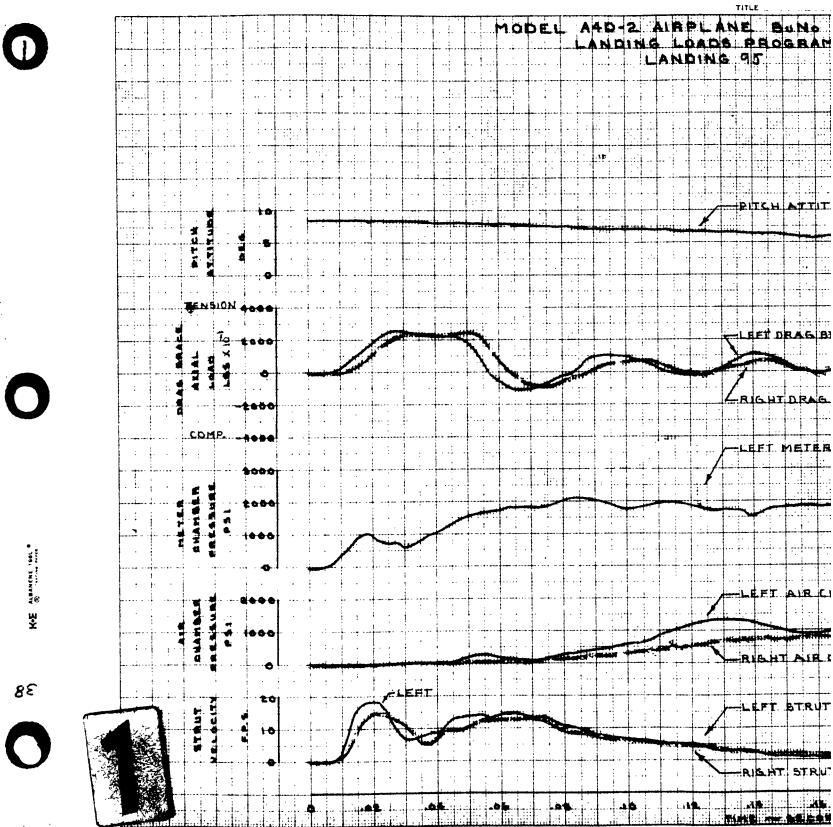
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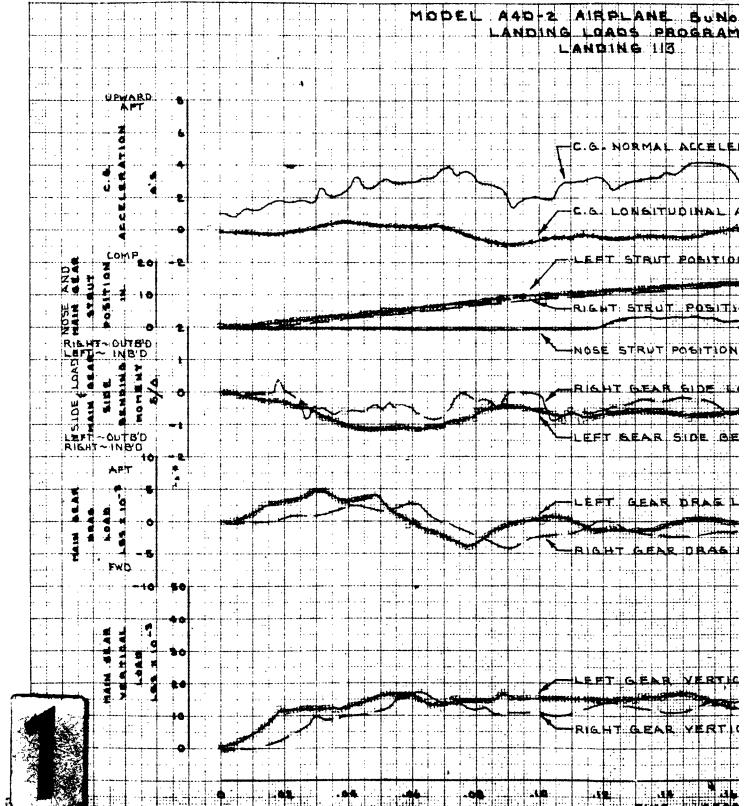
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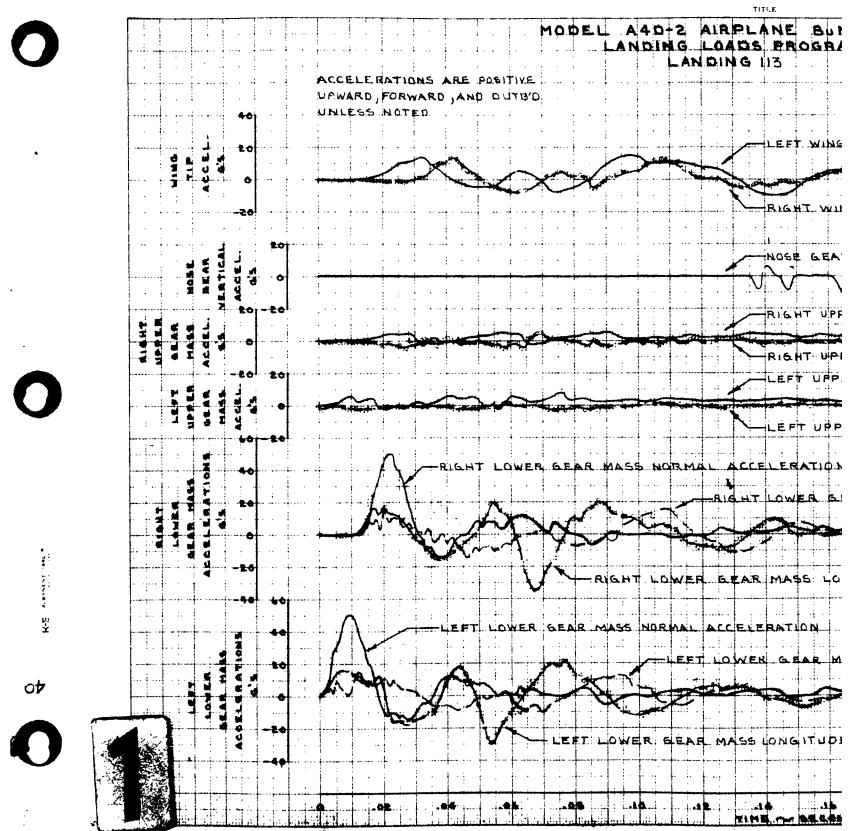
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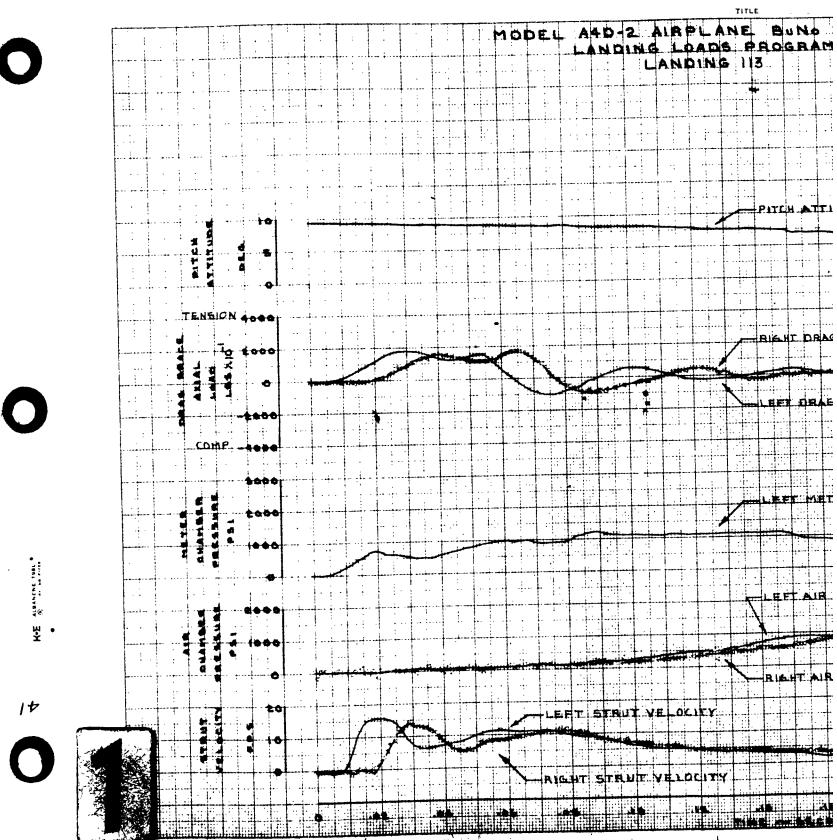
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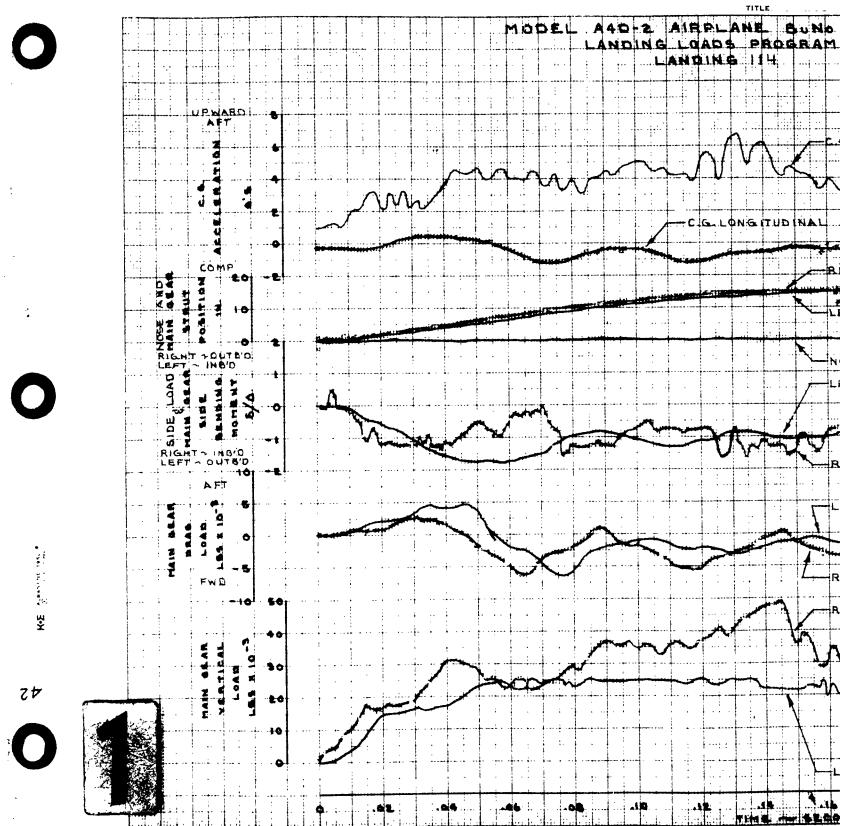
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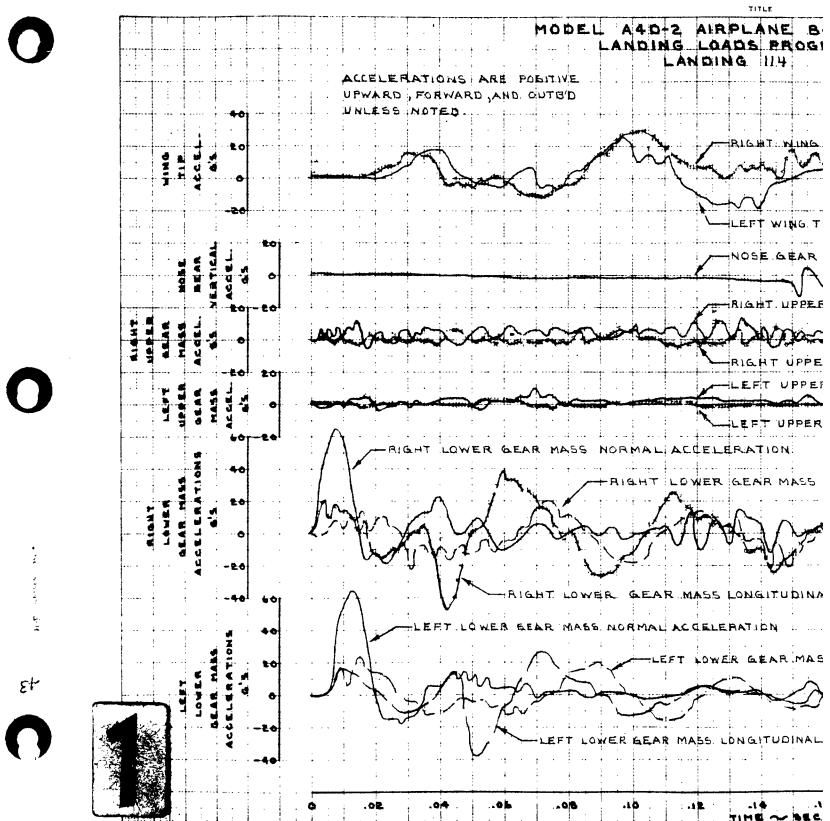
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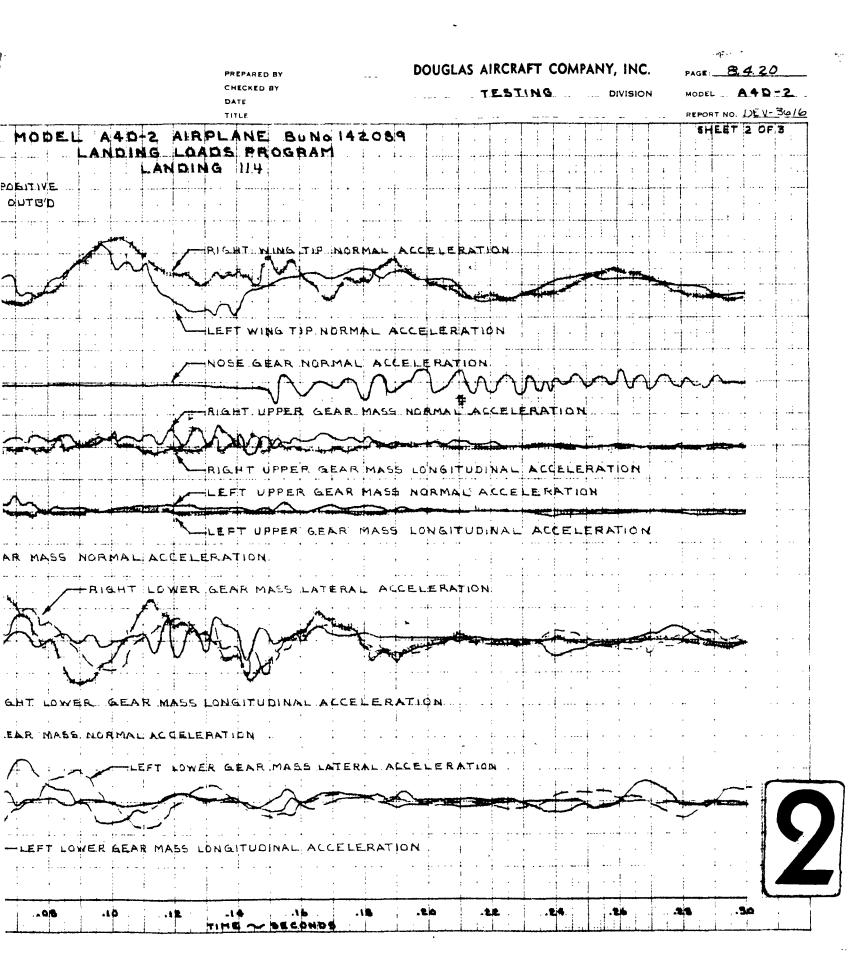
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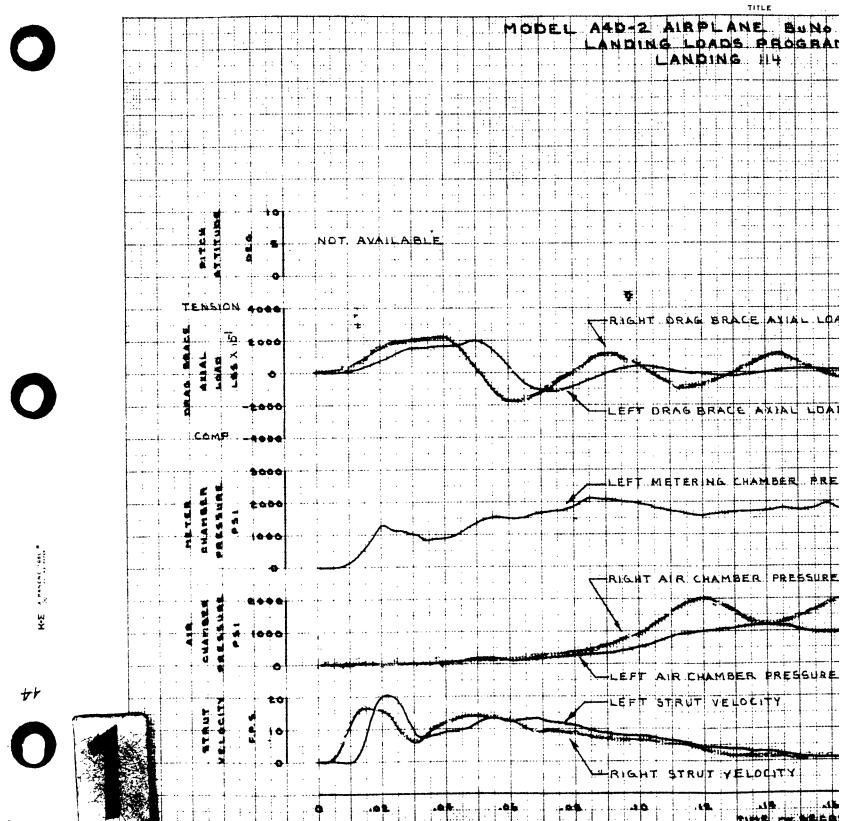
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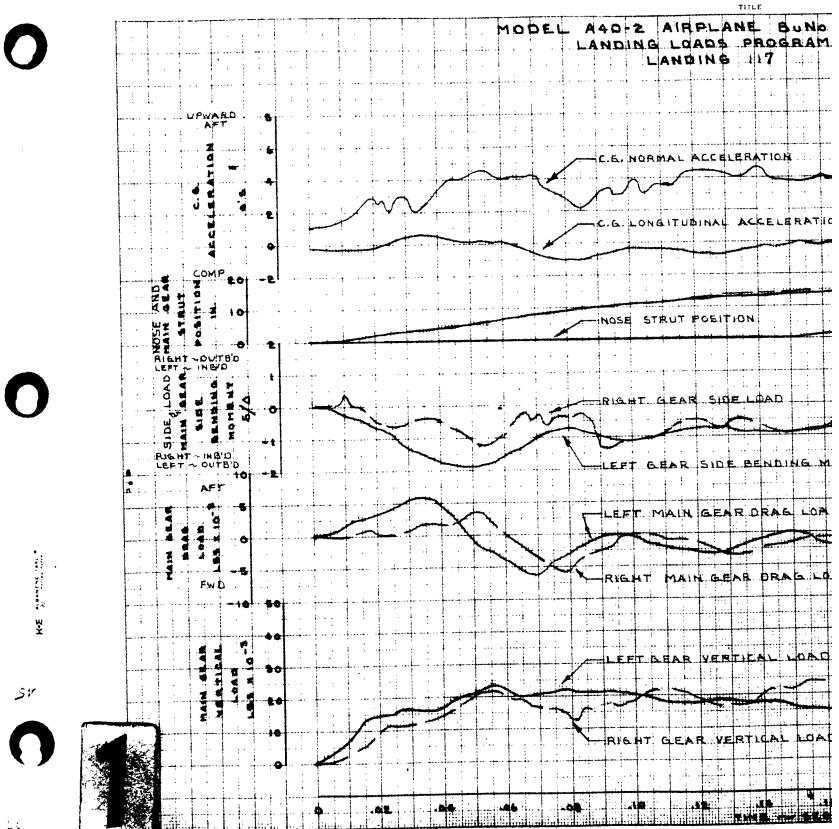
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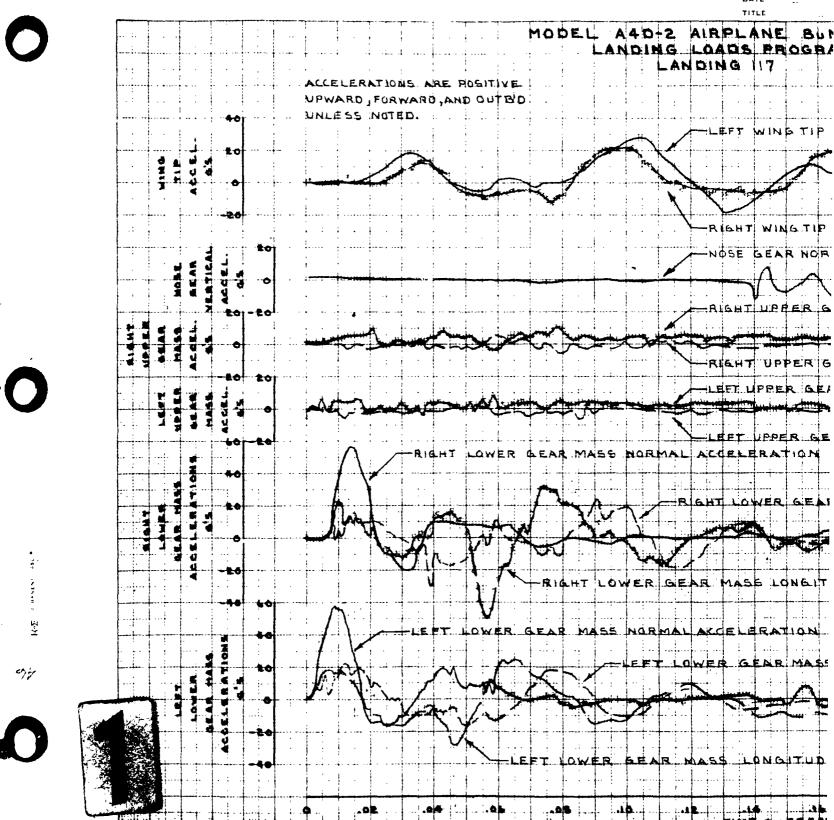




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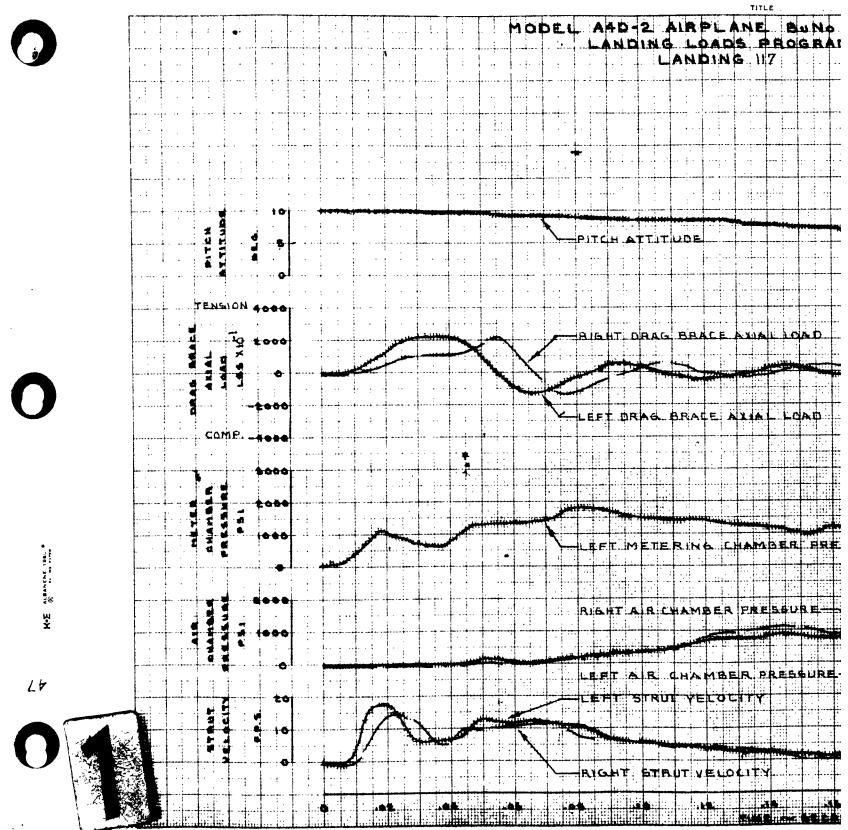


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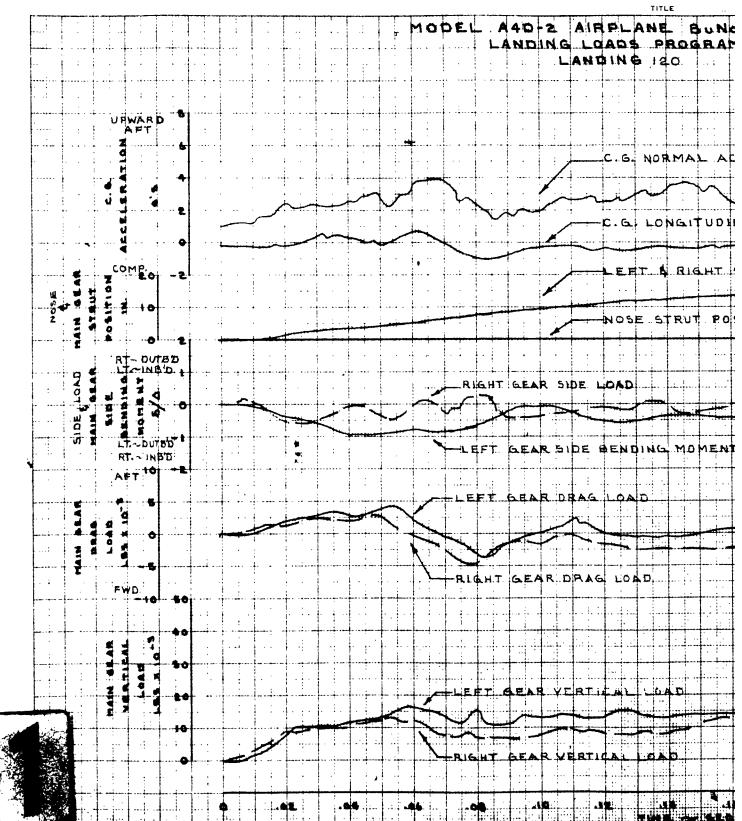
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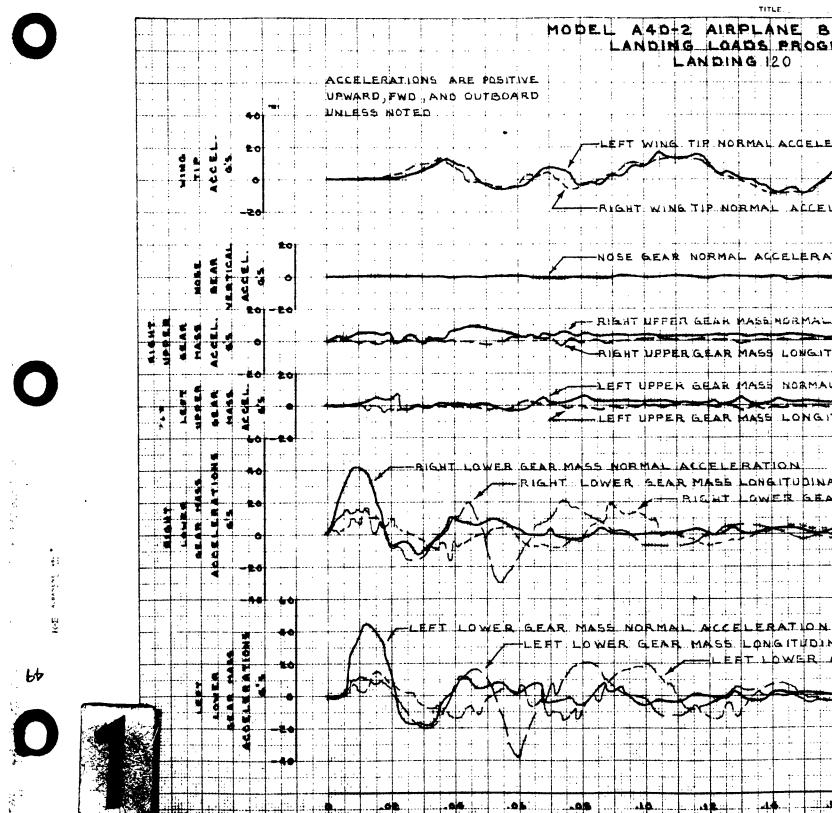
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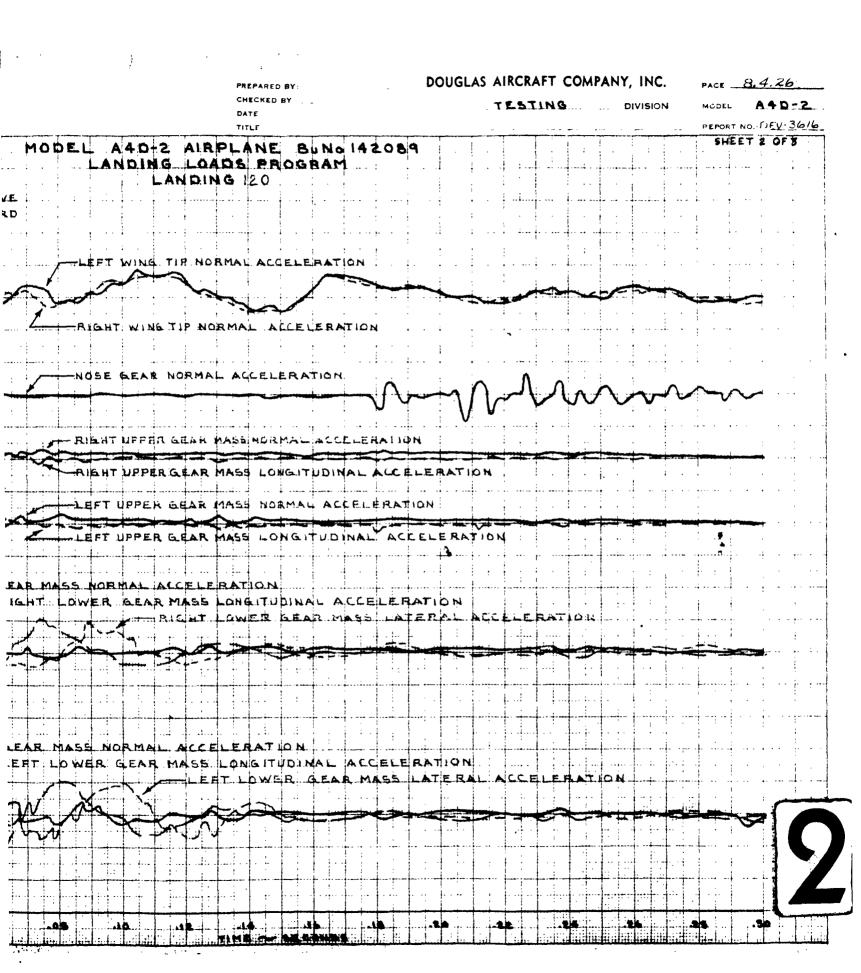


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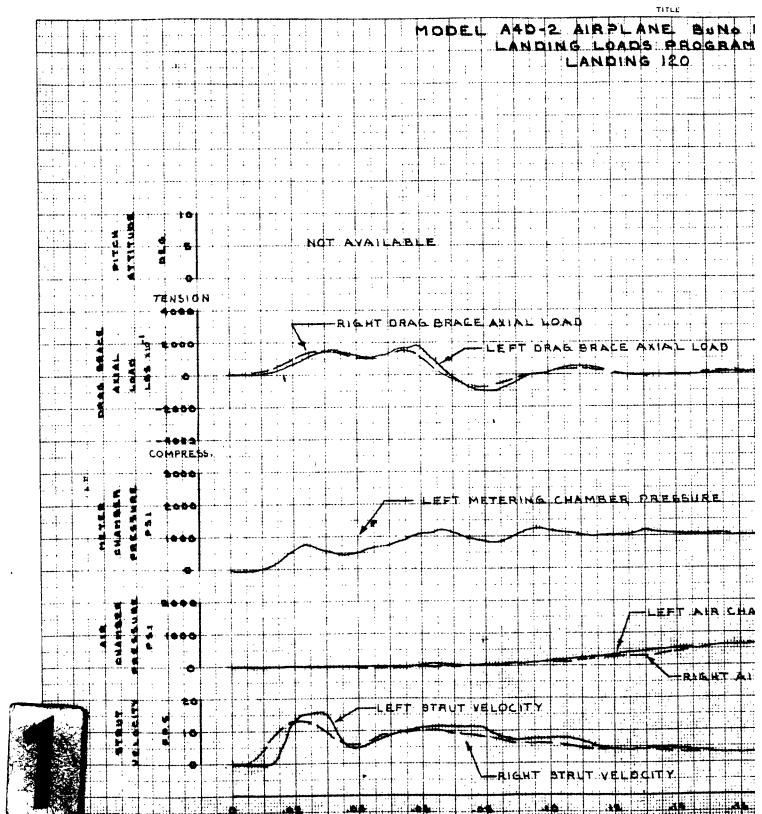
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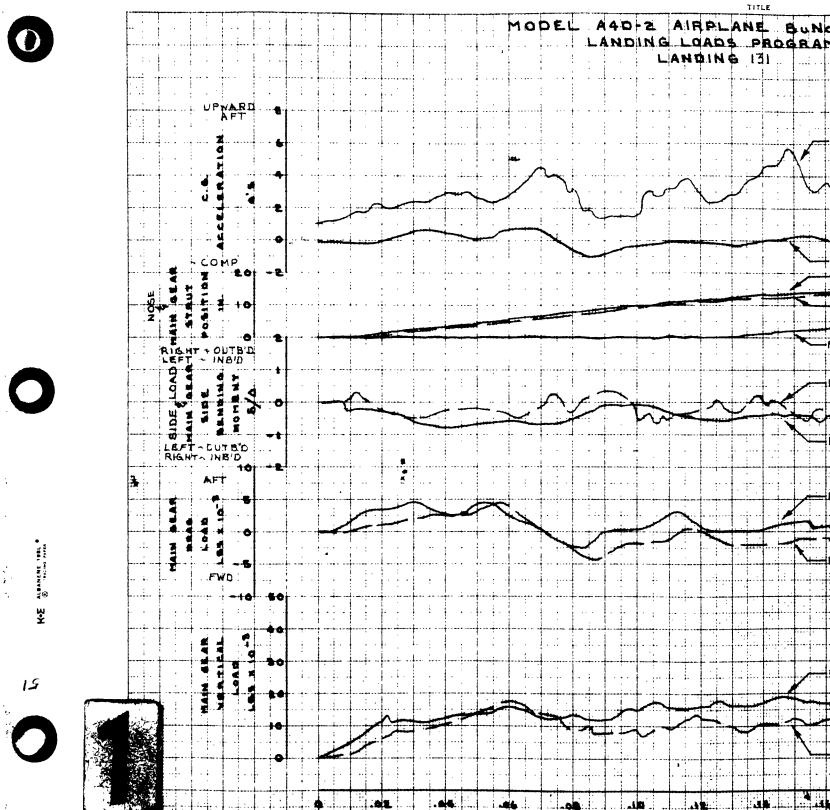
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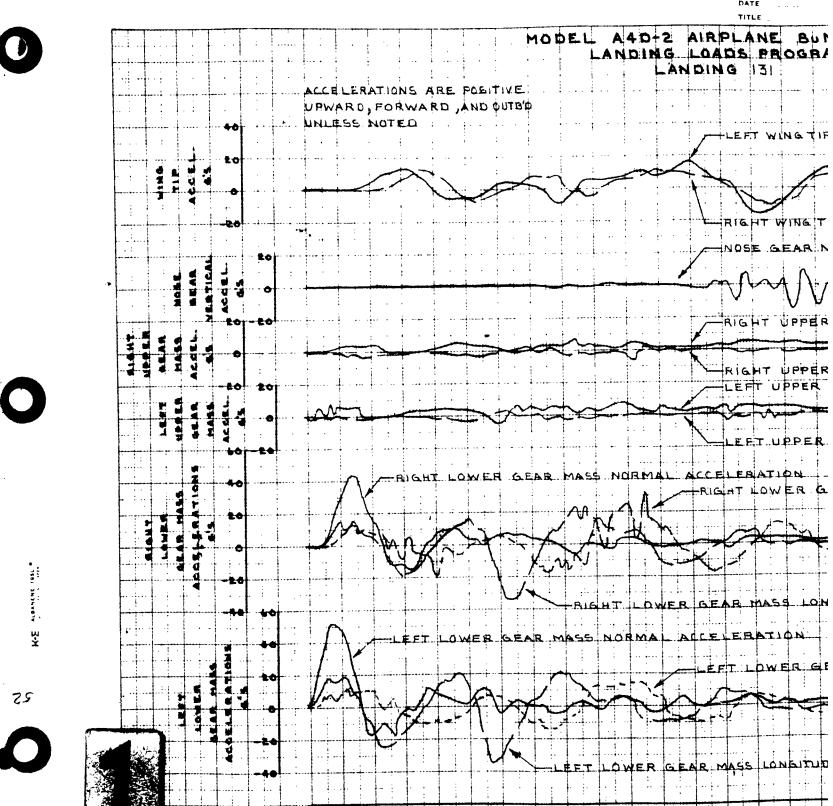
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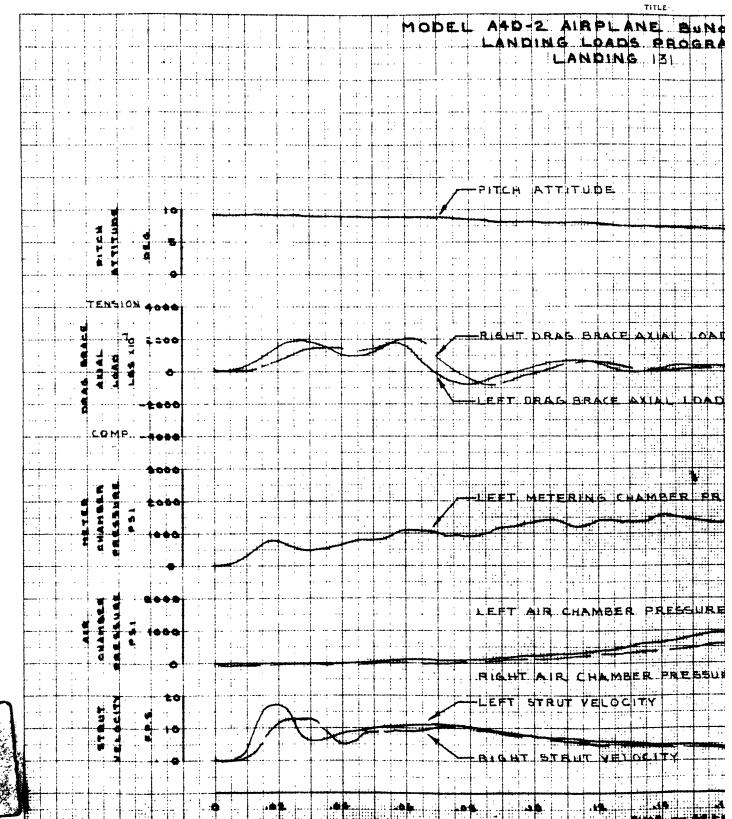
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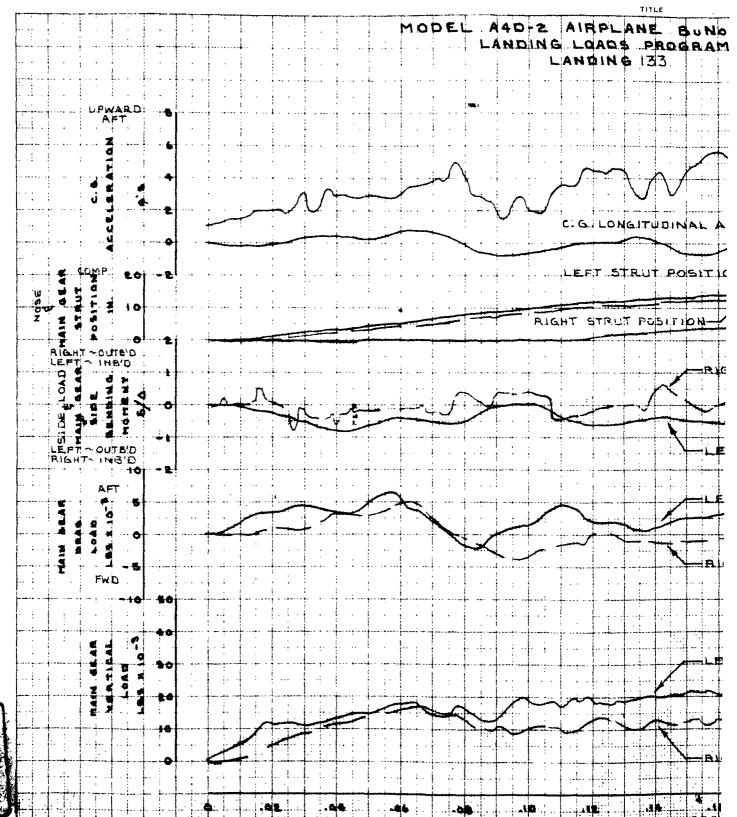
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PAGE 8.4.30 DOUGLAS AIRCRAFT COMPANY, INC. PREPARED BY: CHECKED BY TEBTING .... DIVISION DATE.\_ REPORT NO. DEV- 3616 TITLE . SHEET 3 OF 3 ODEL AAD 2 AIRPLANE BUNG 142089 LANDING LOADS PROGRAM LANDING 131 BITCH ATTITUDE LEFT AIR CHAMBER PRESSURE HIGHT AIR CHAMBER PRESSURE LEFT STRUT VELOCITY BIGHT STRUT VETOCITY

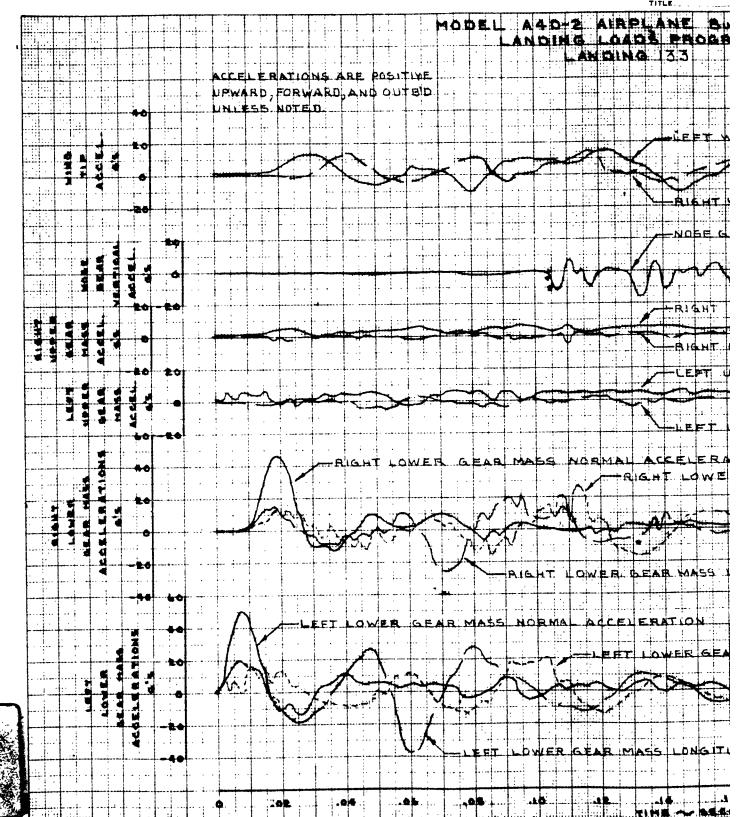


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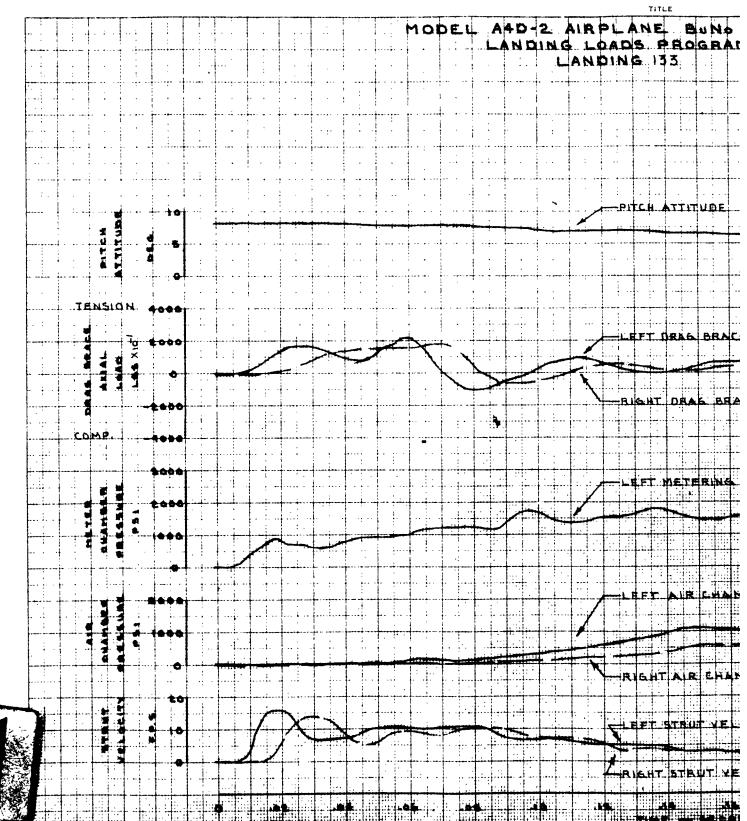
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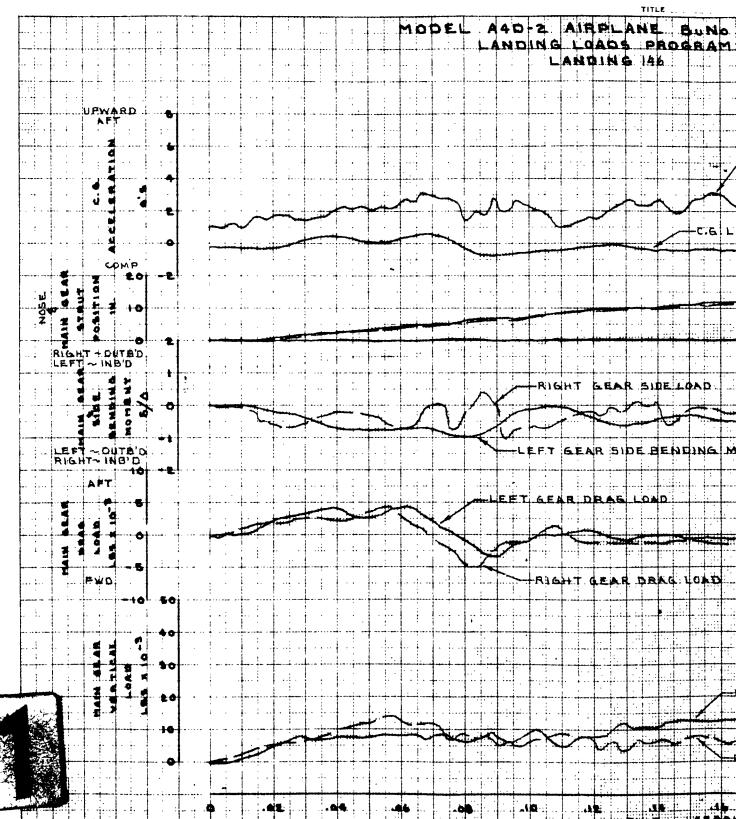
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FORM 25 8P-1 REV. 7-54)

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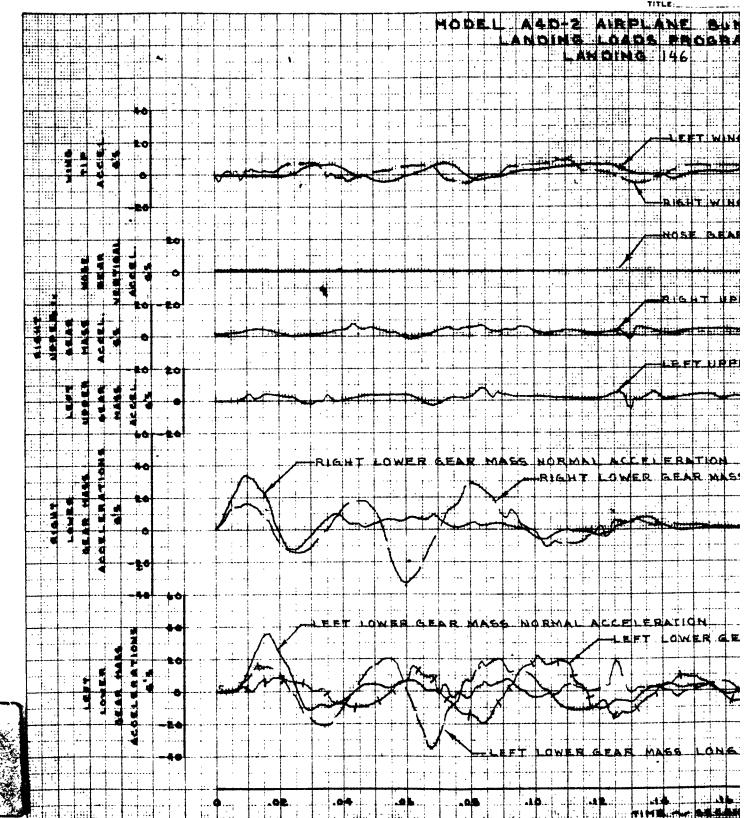
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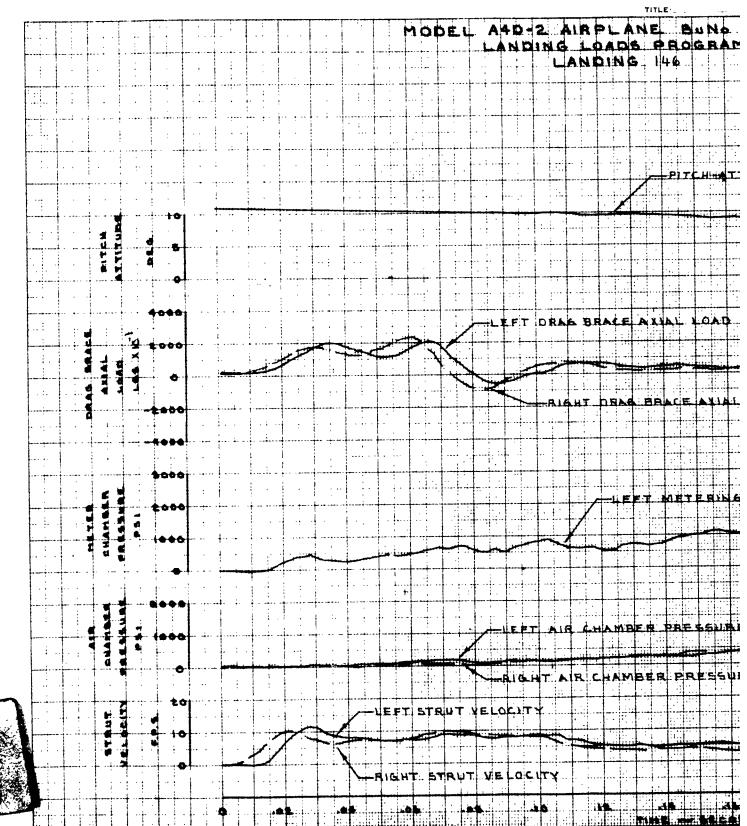
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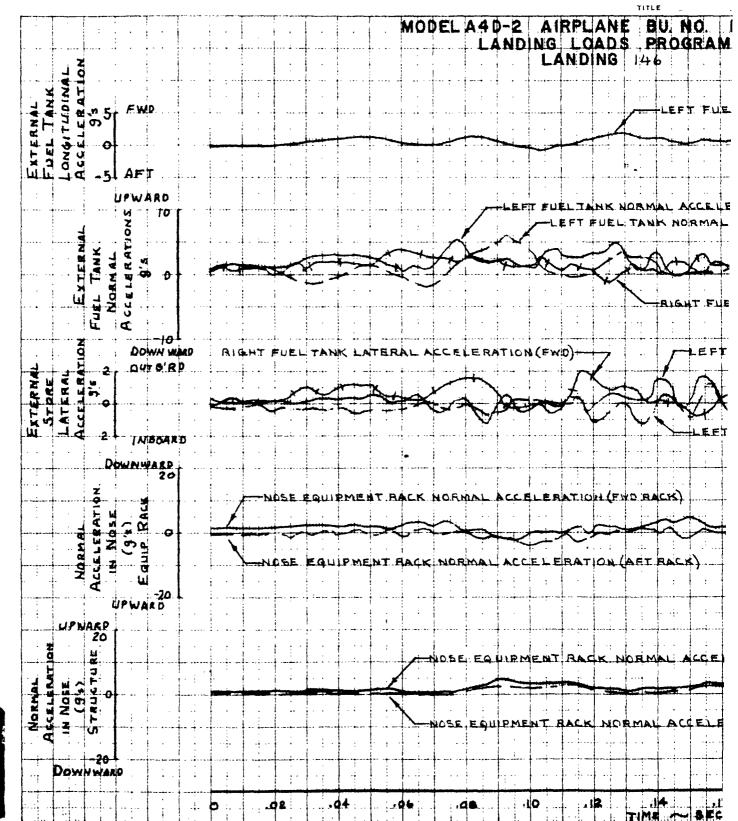
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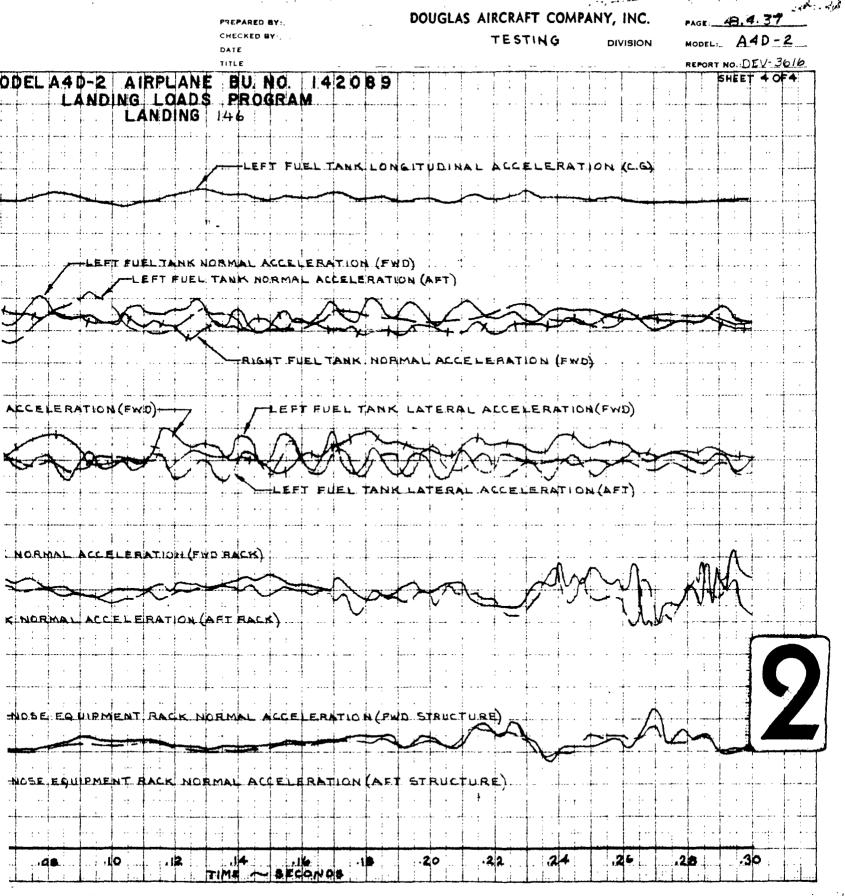
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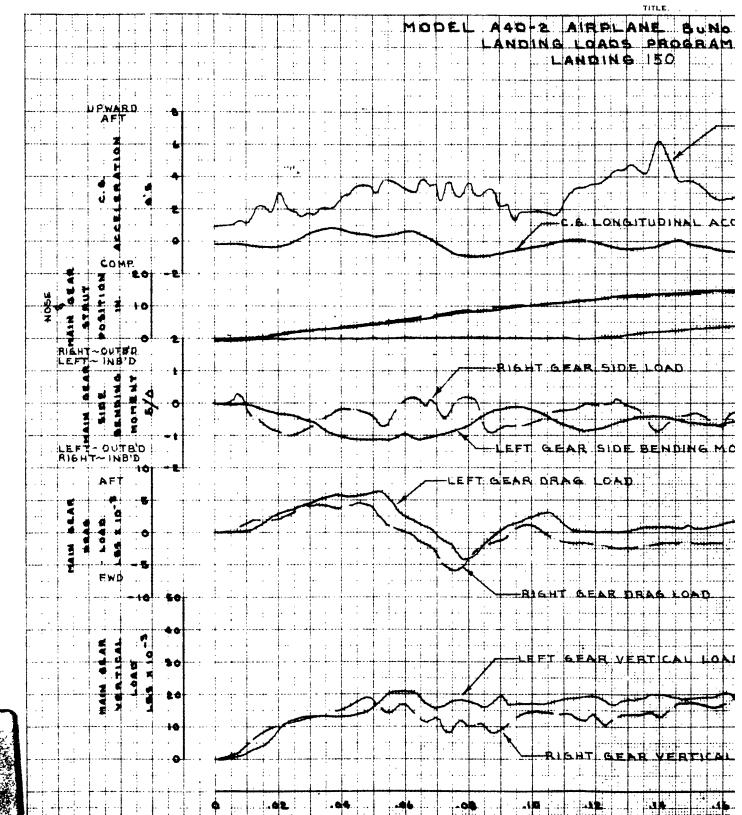
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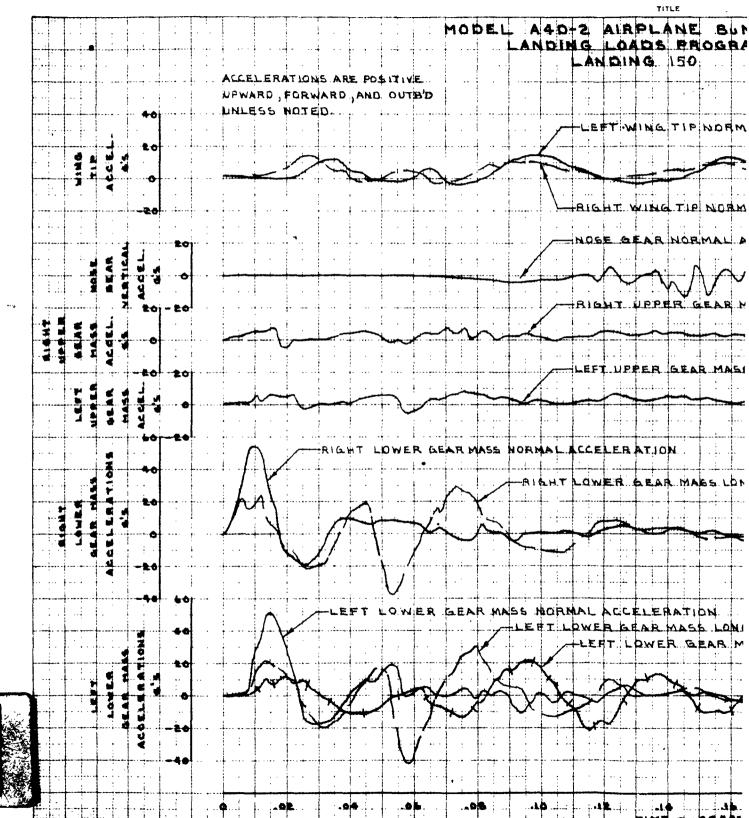


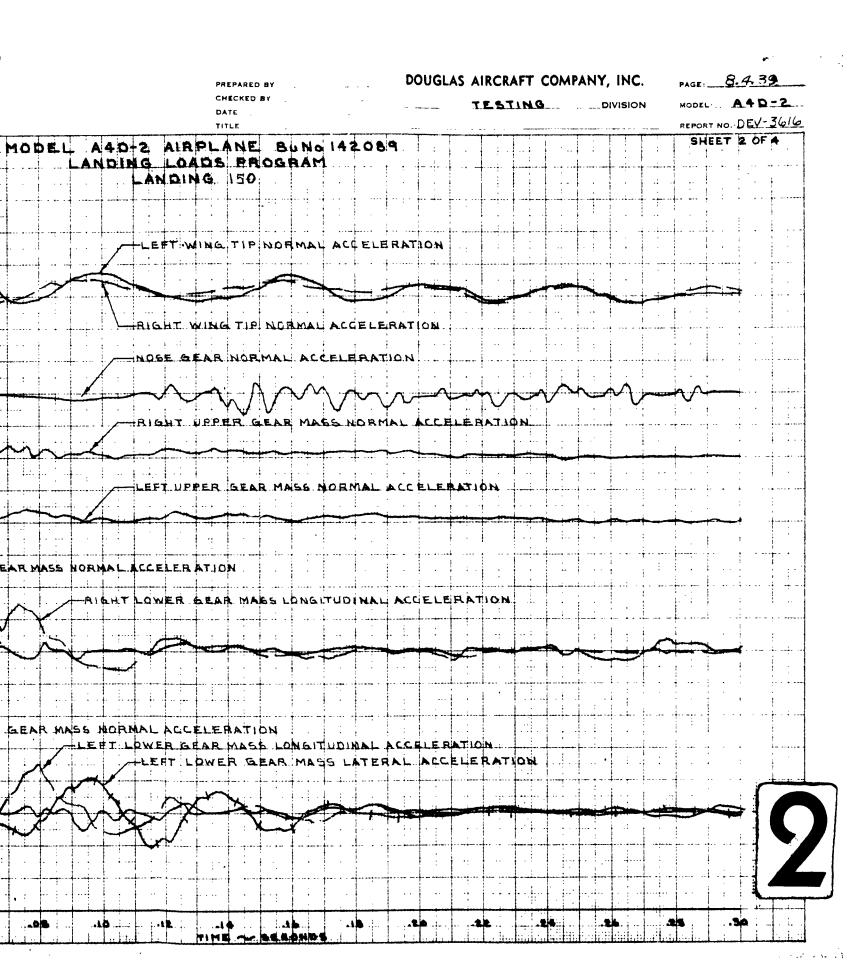




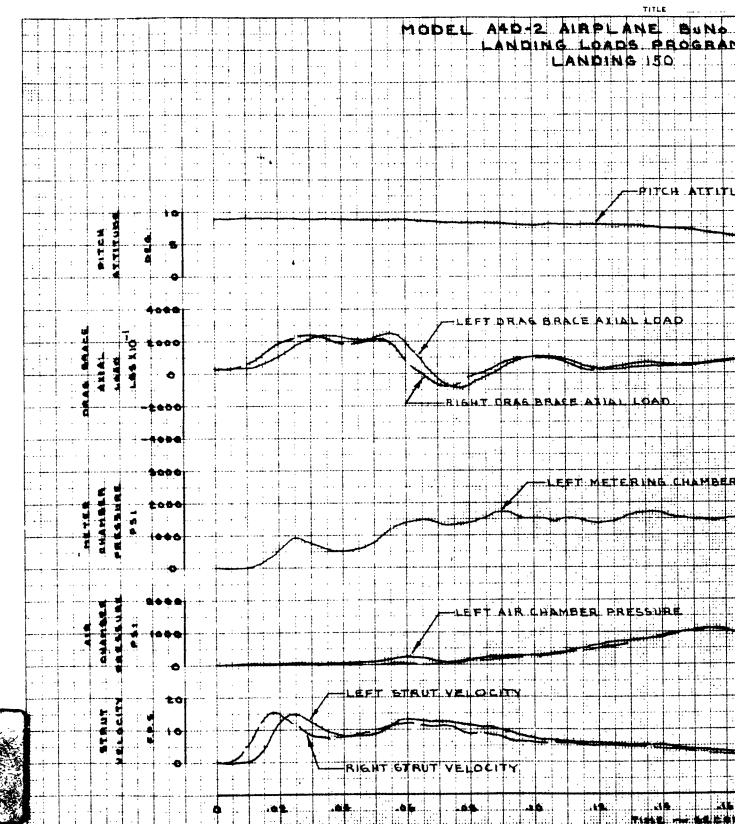
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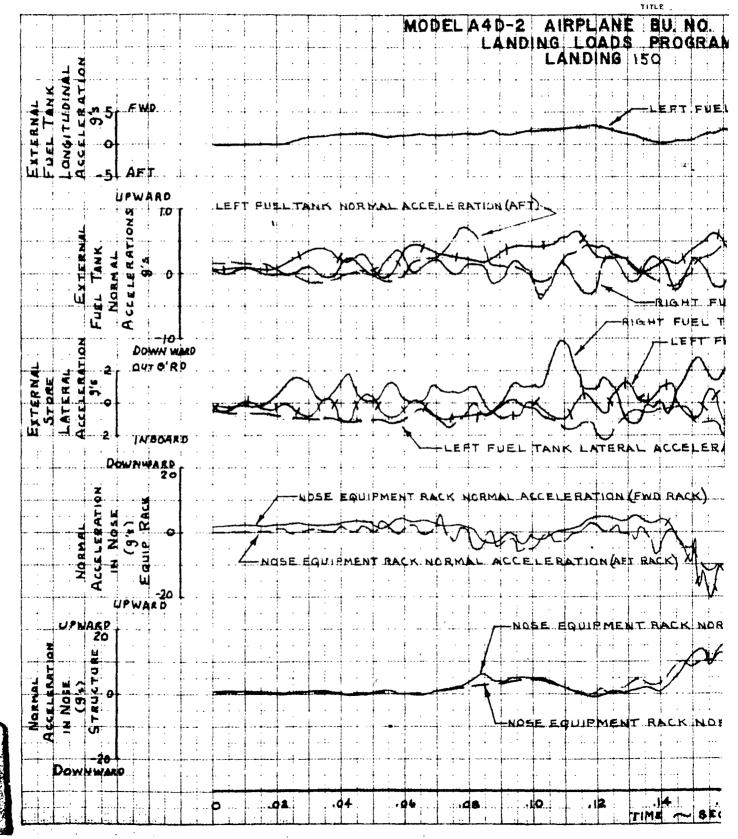


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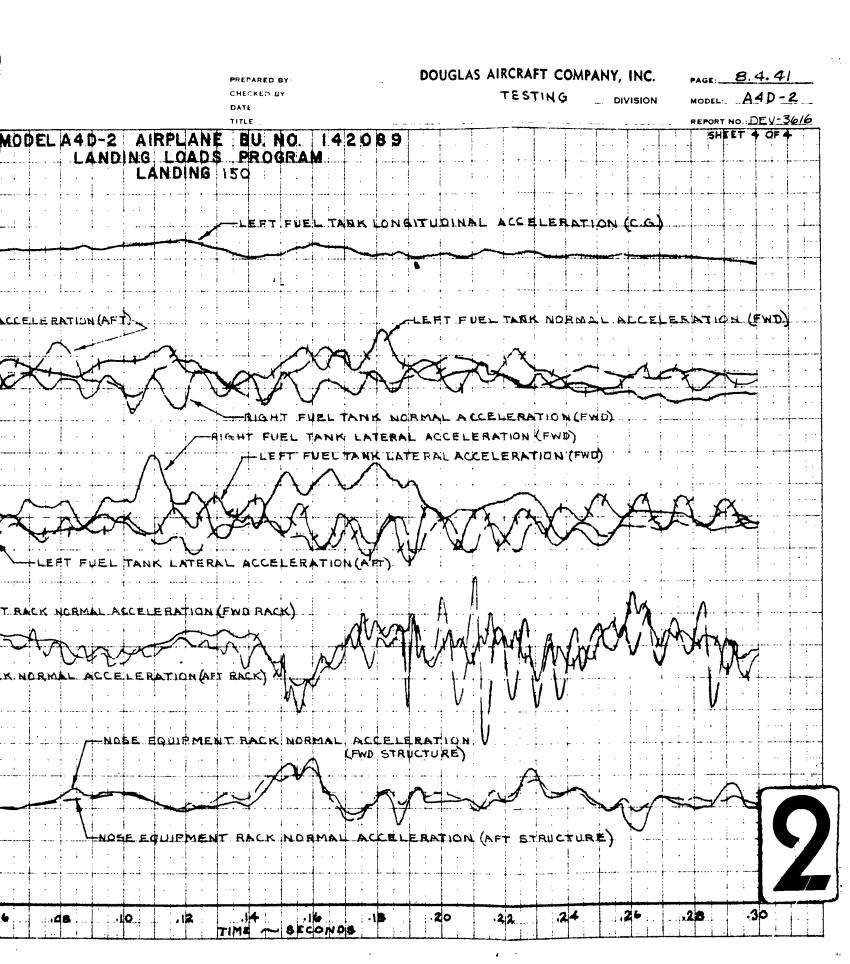


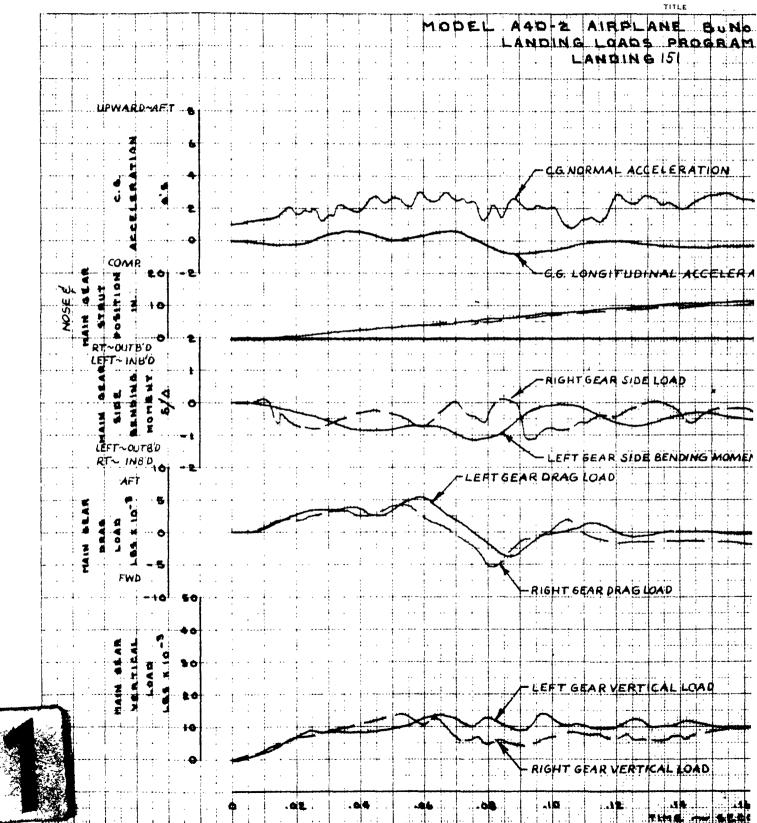
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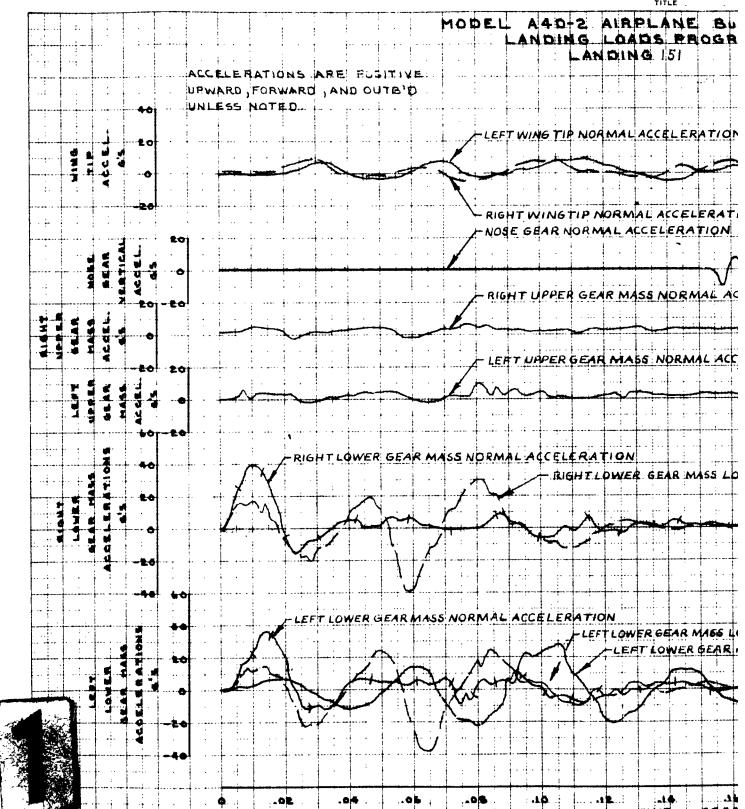
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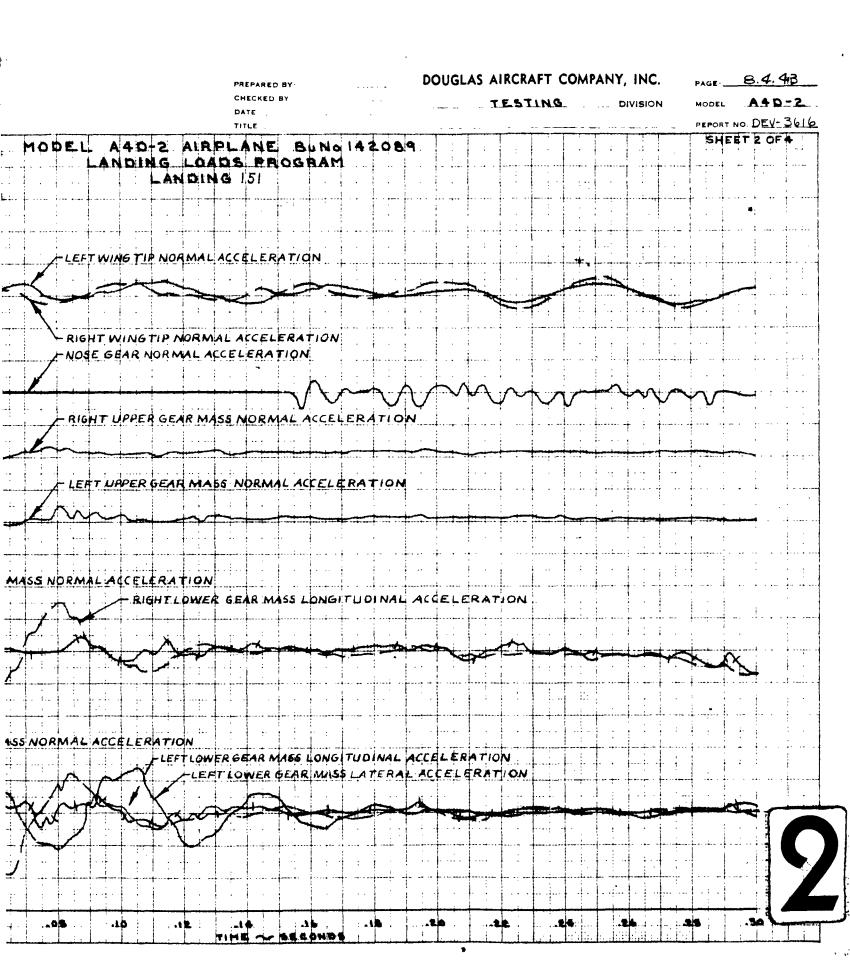


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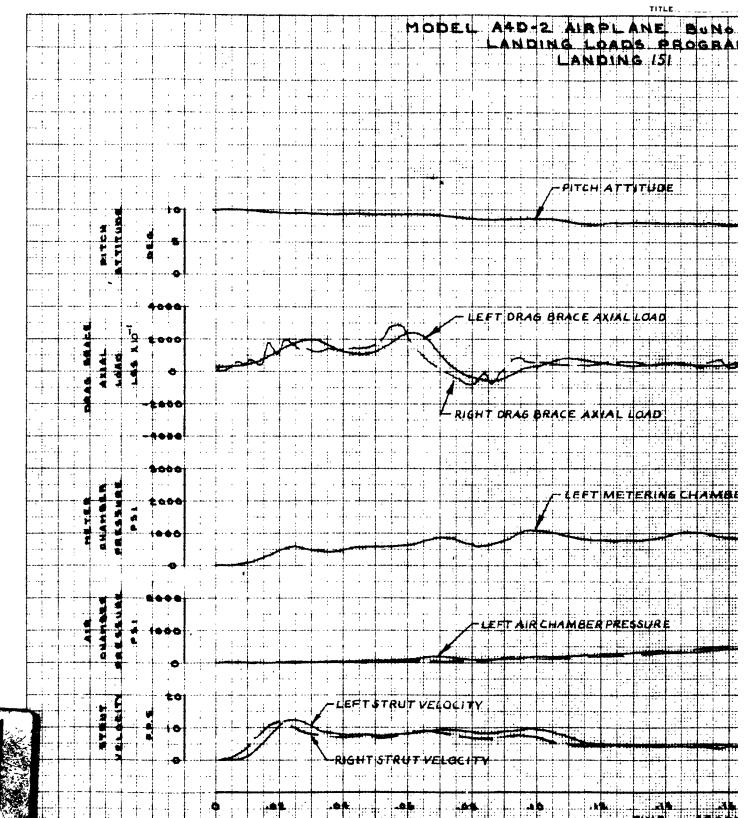
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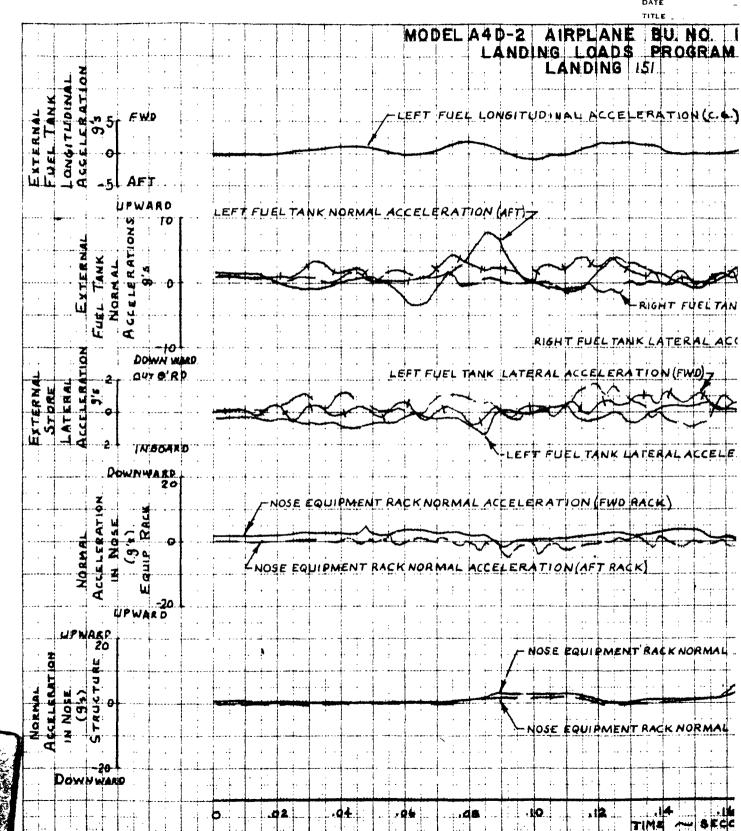
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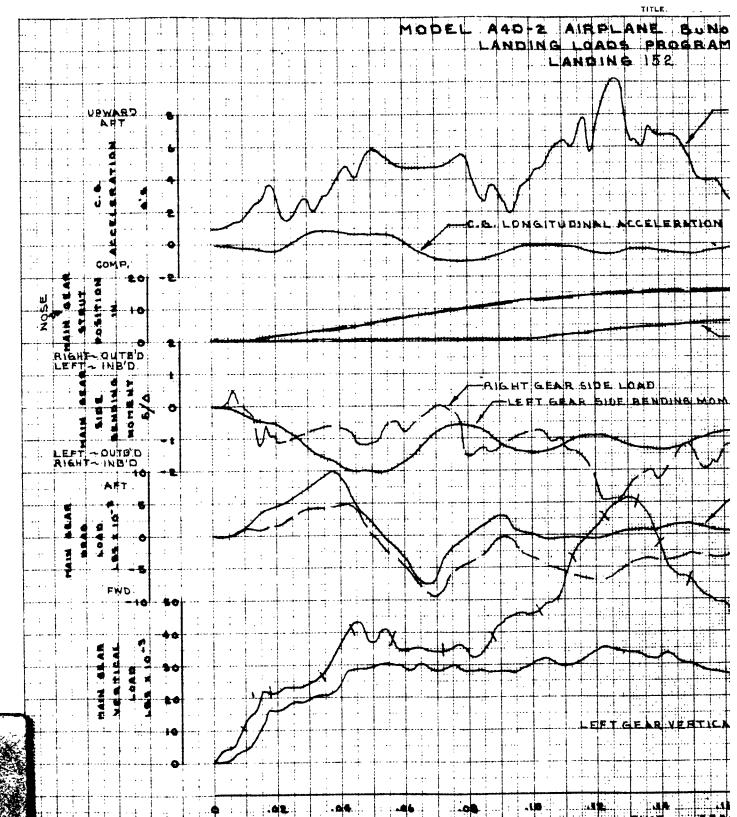
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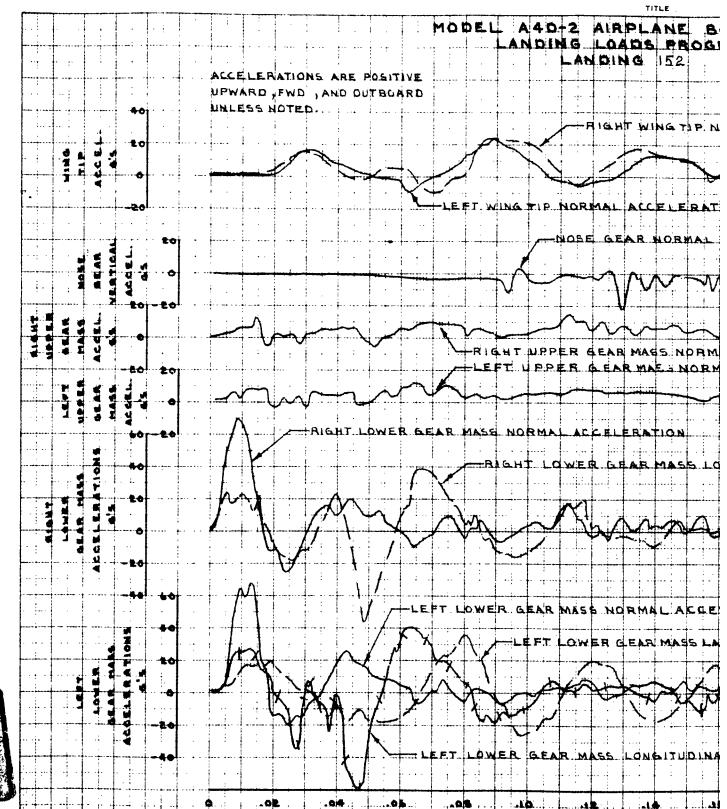
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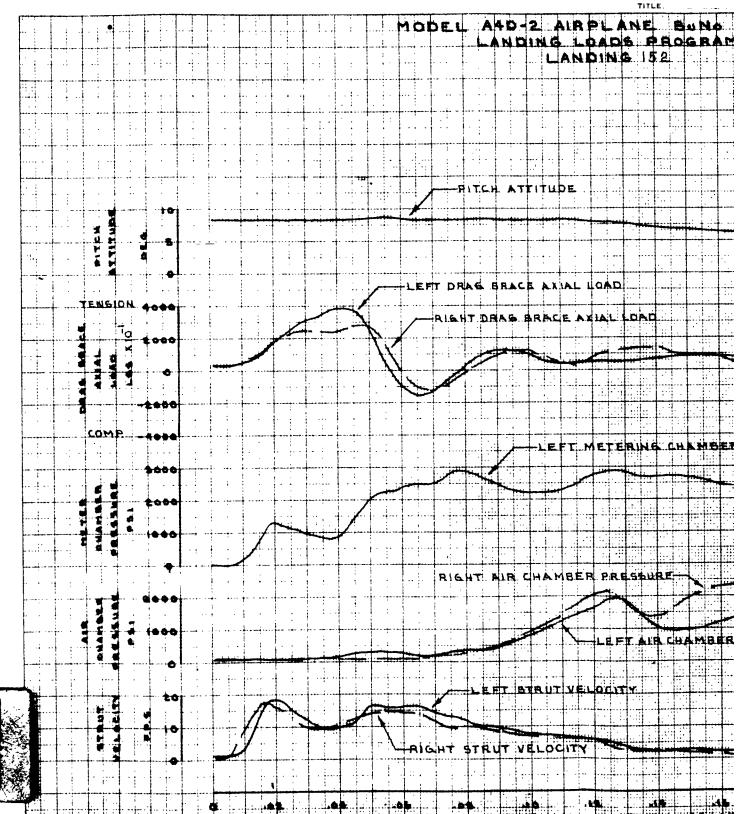


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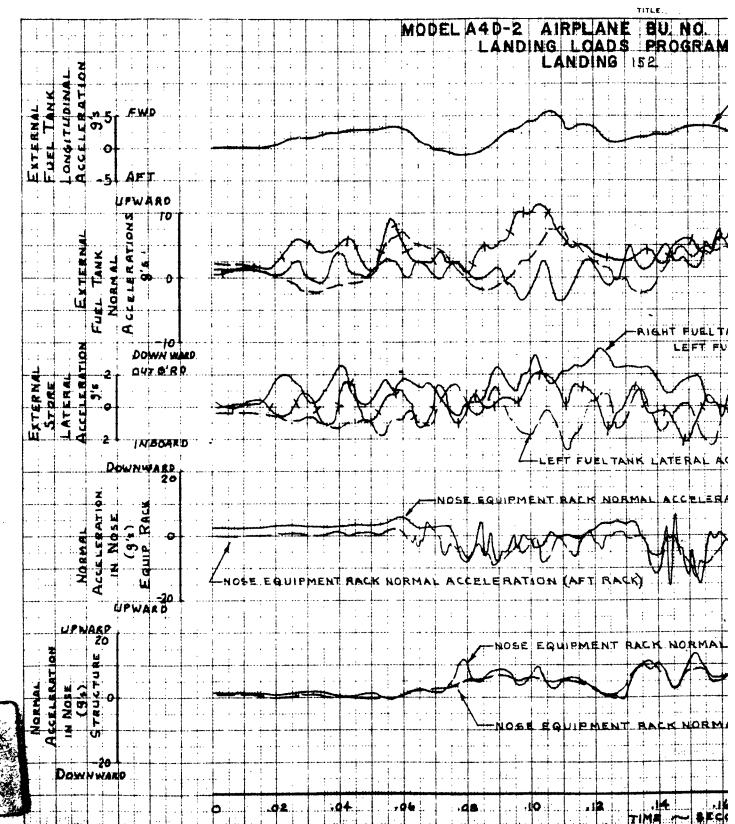
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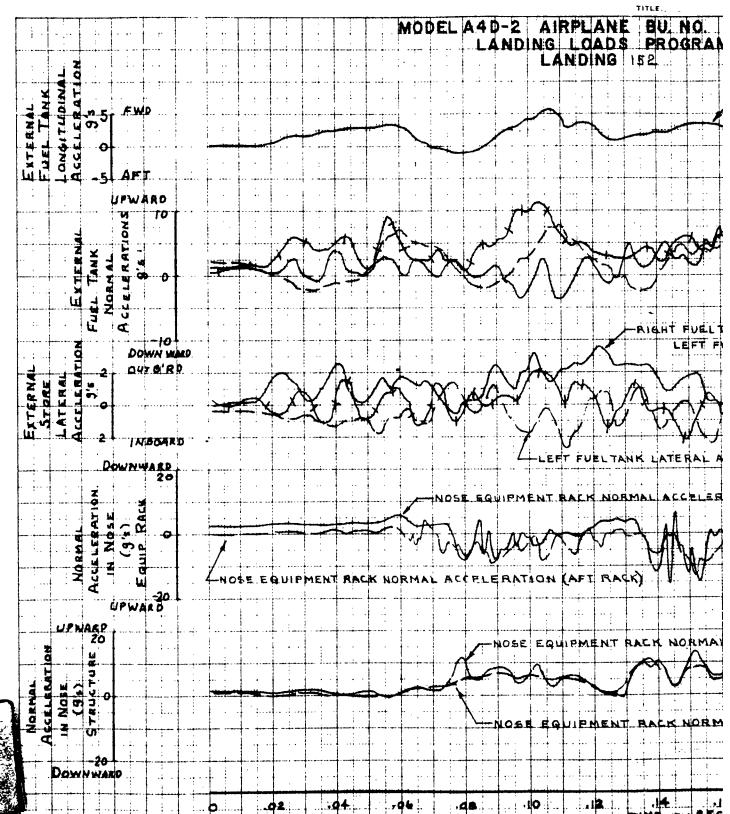
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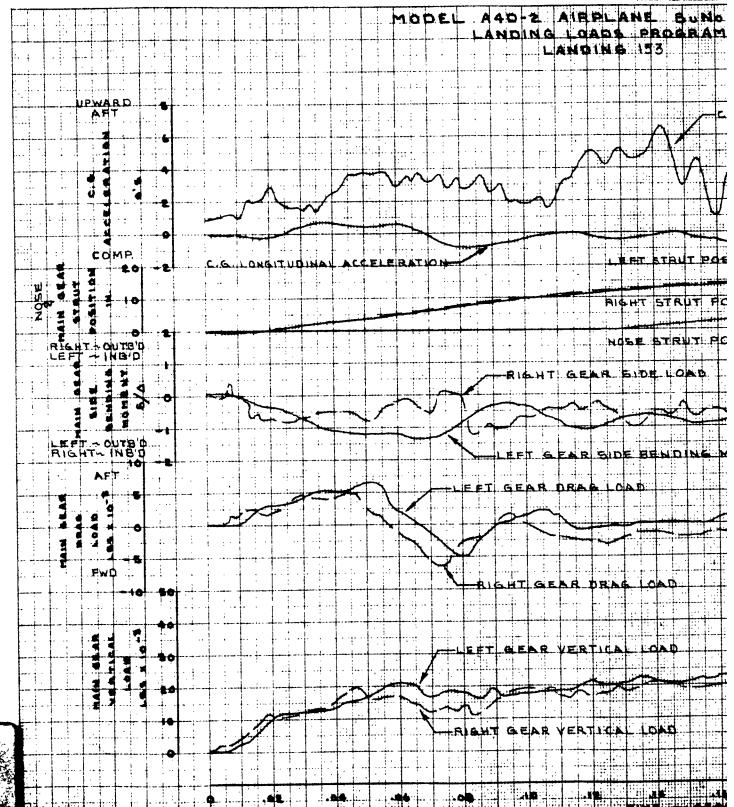
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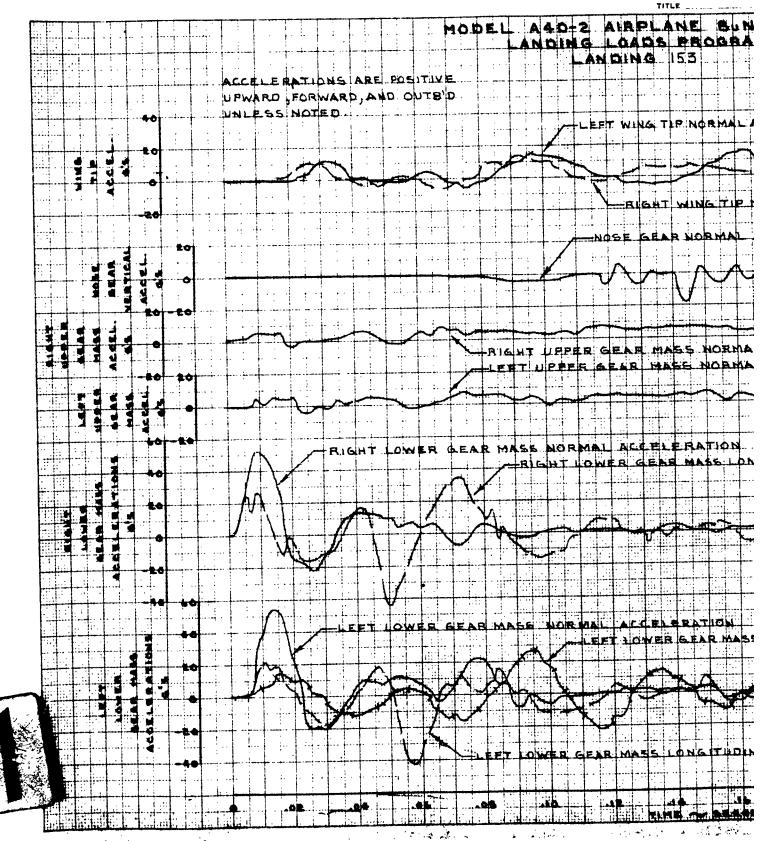
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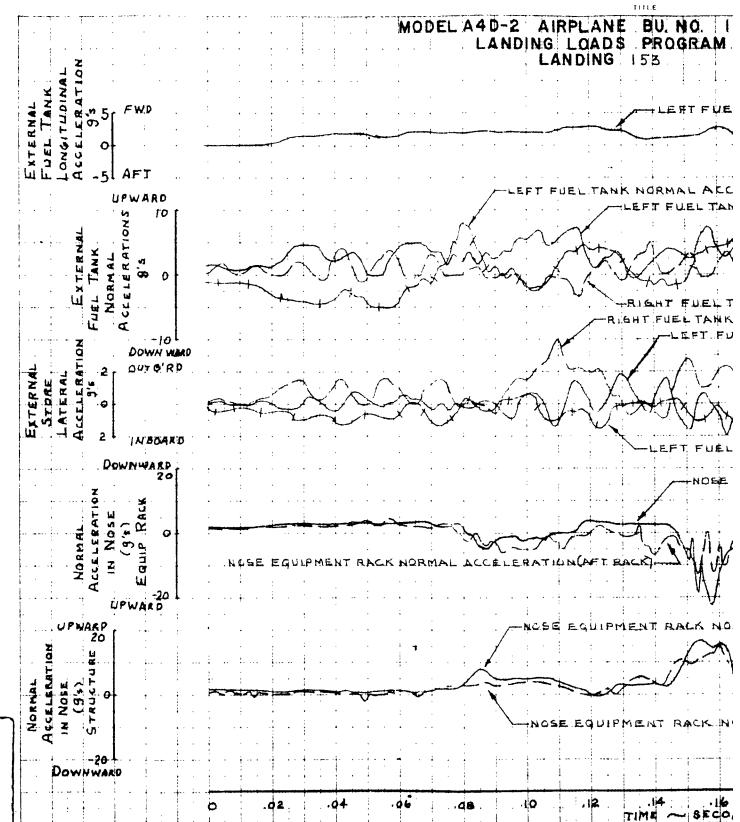
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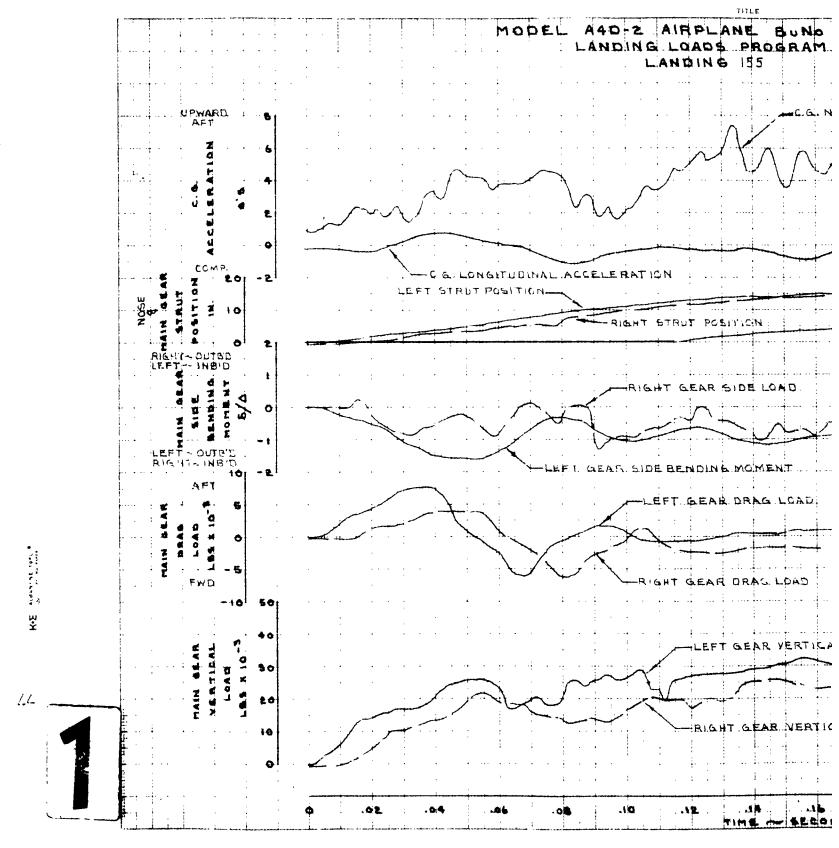
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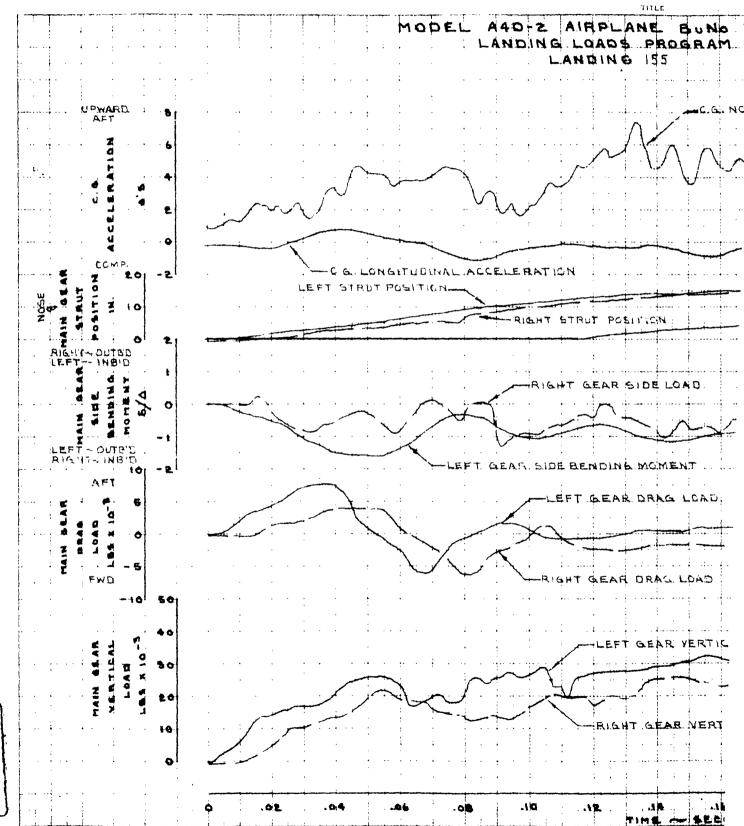
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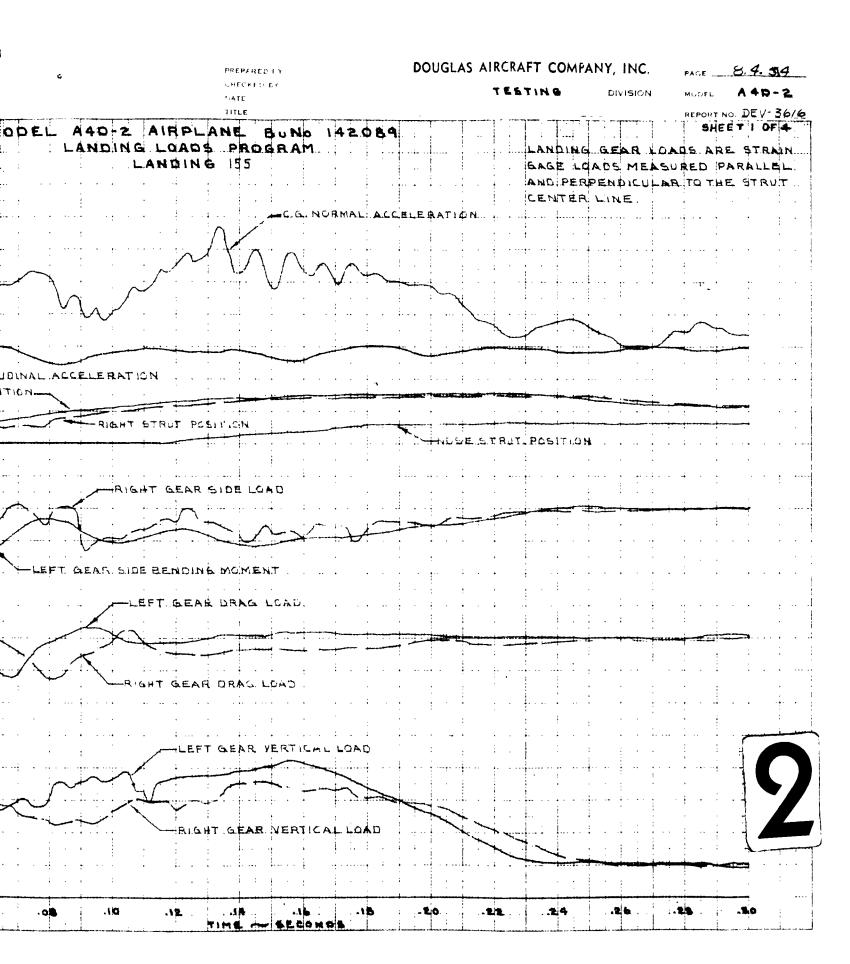


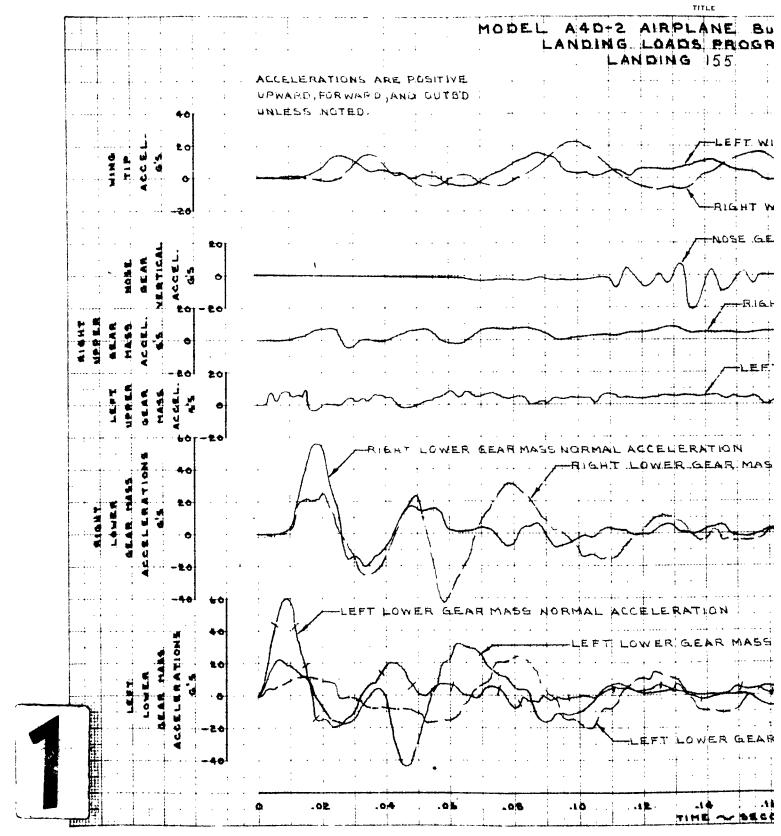
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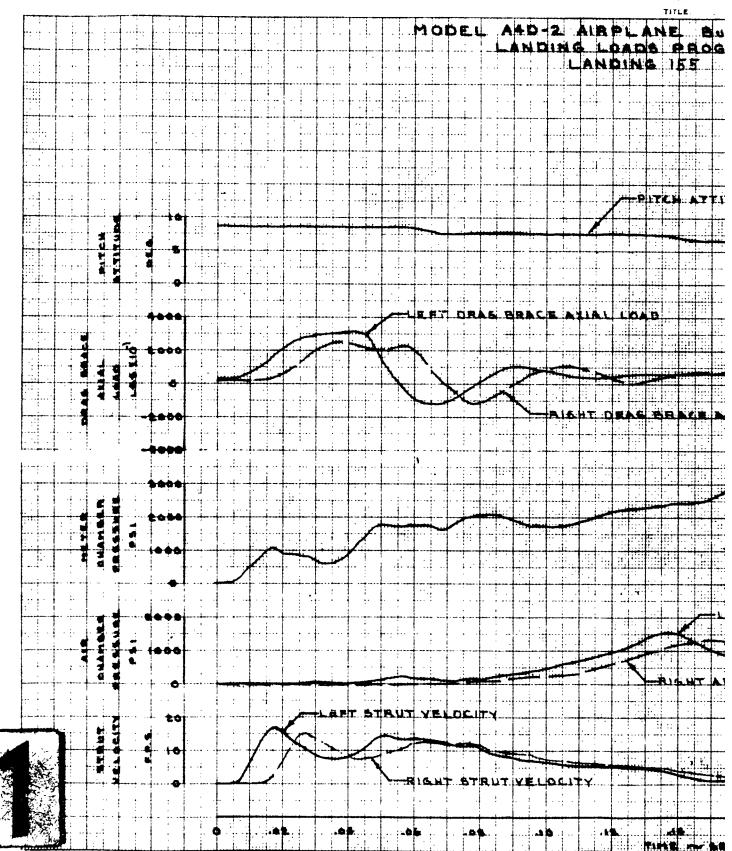
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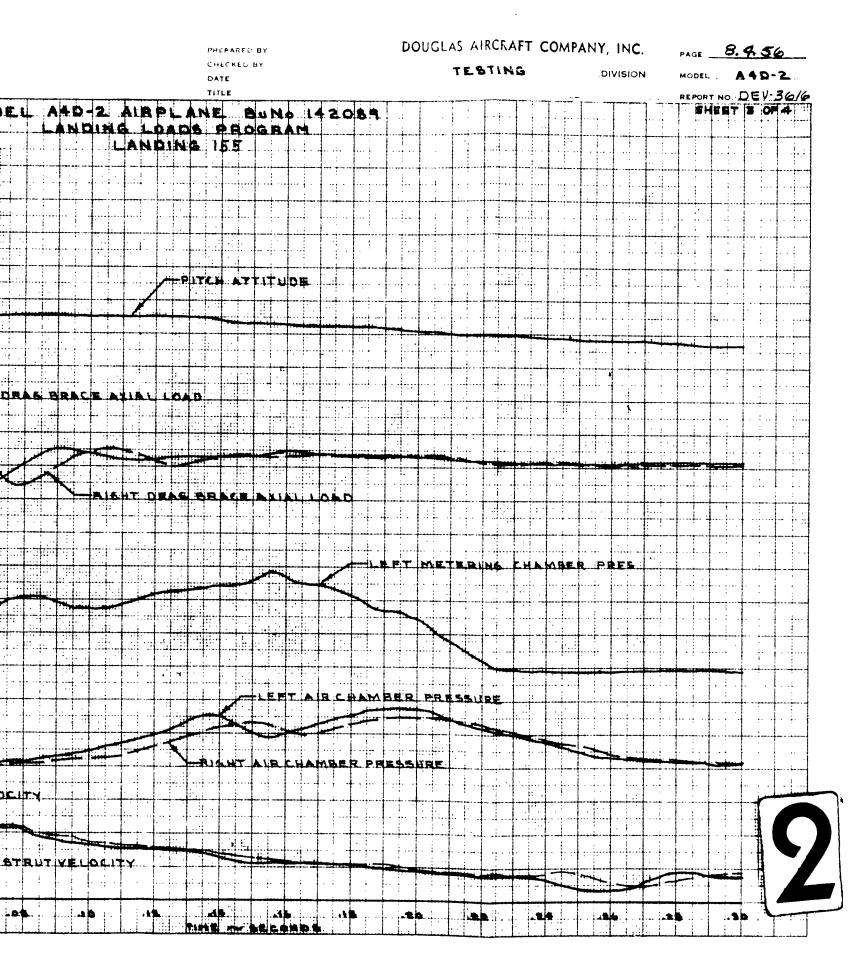
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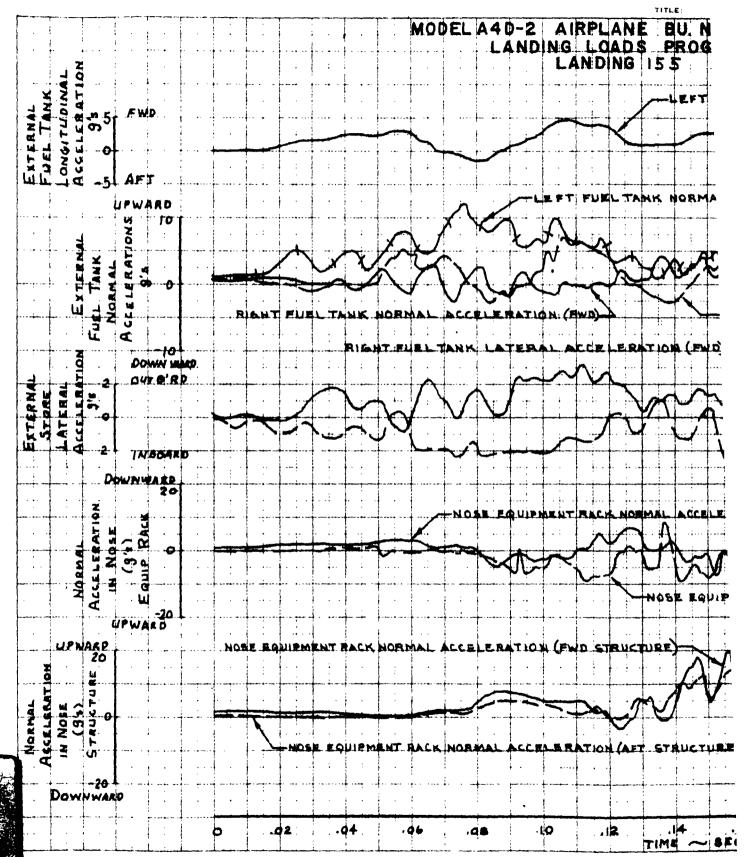
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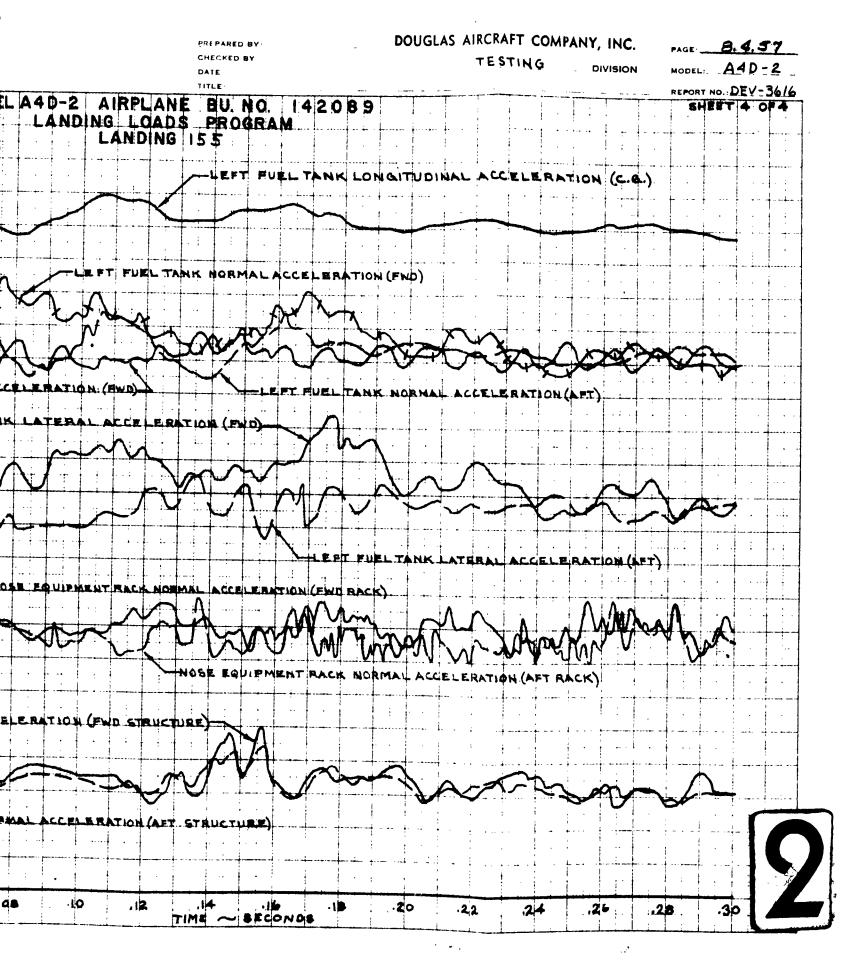
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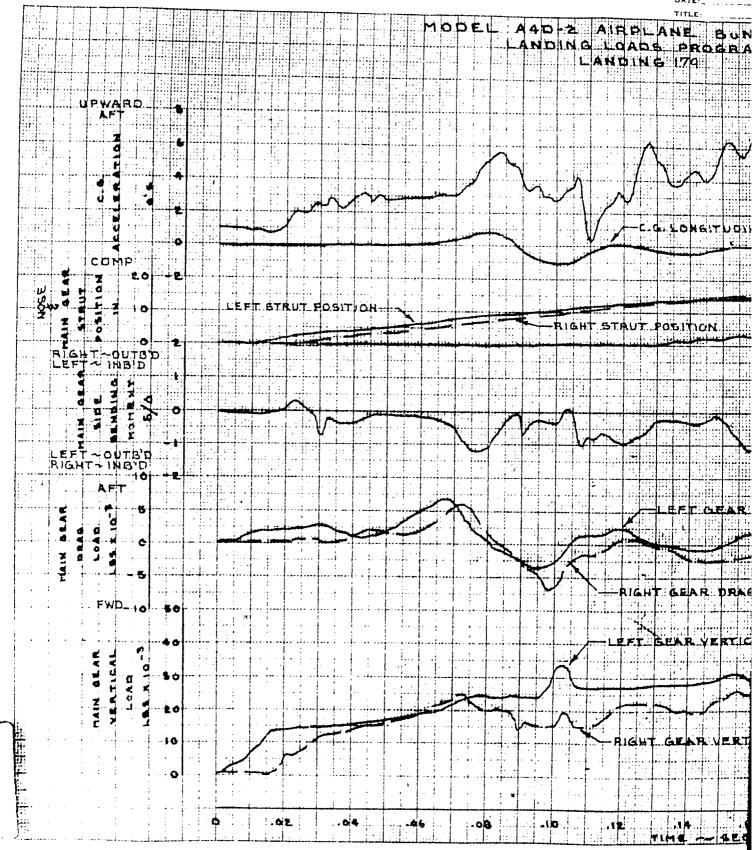




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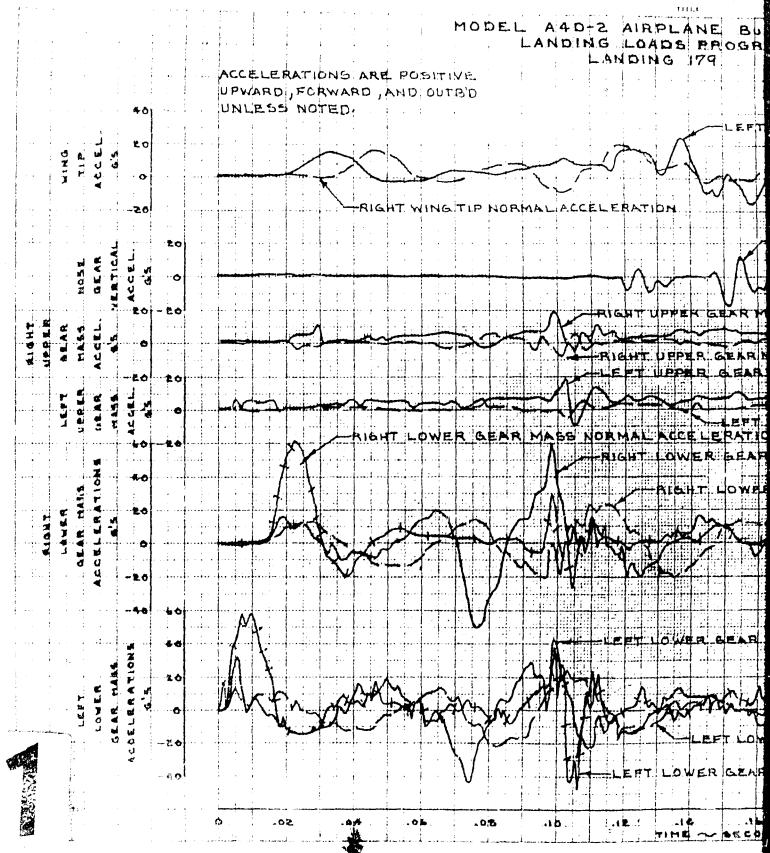
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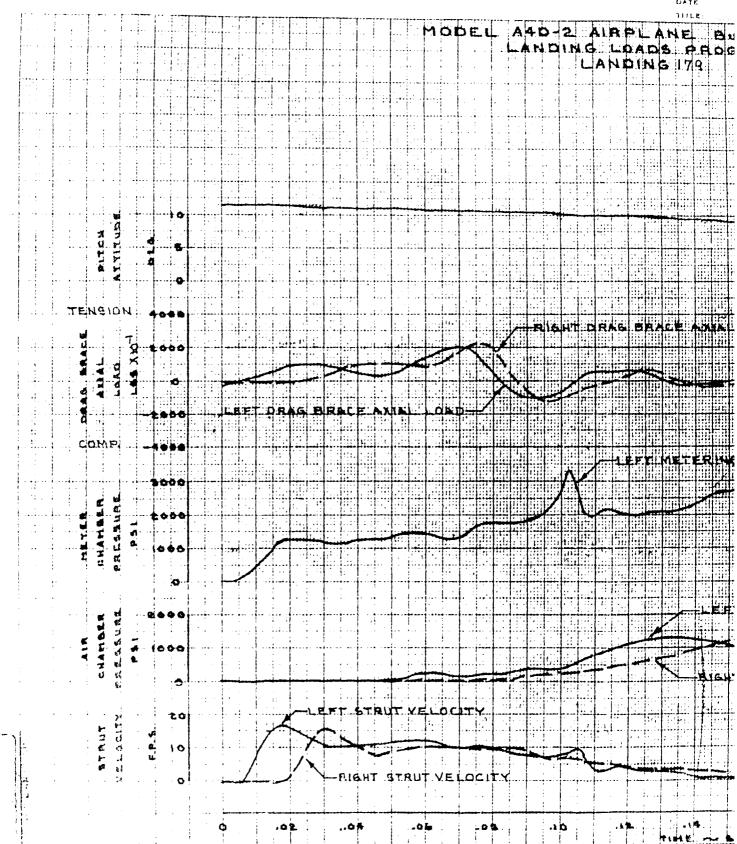


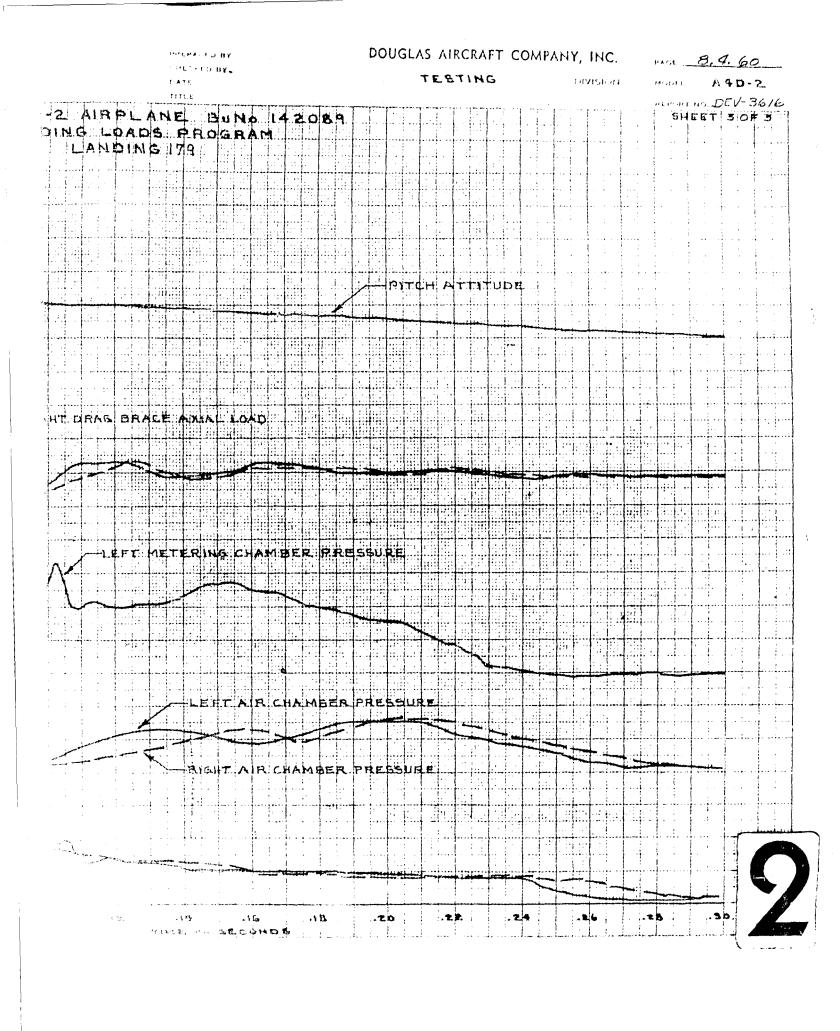
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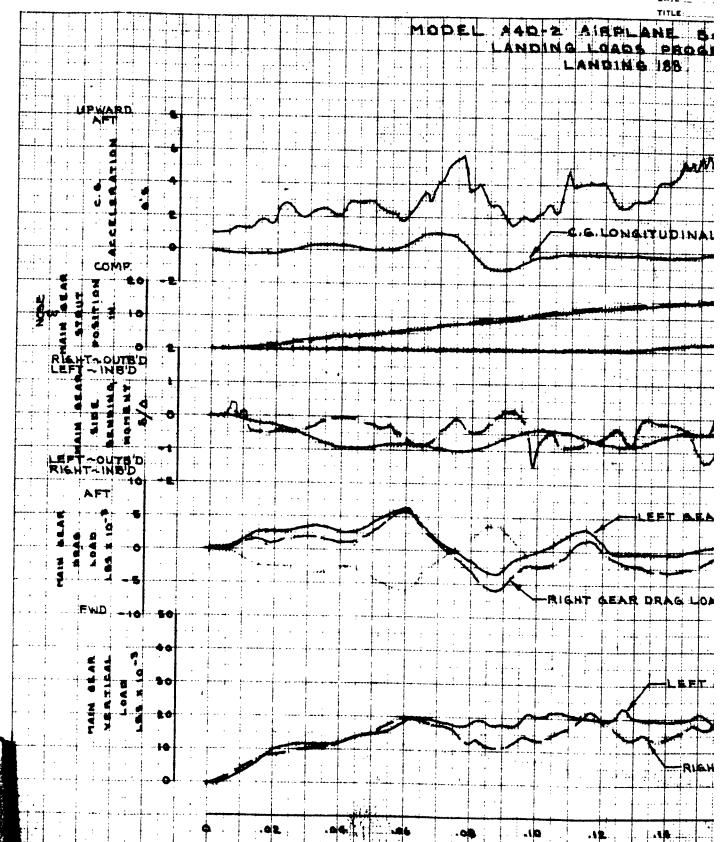


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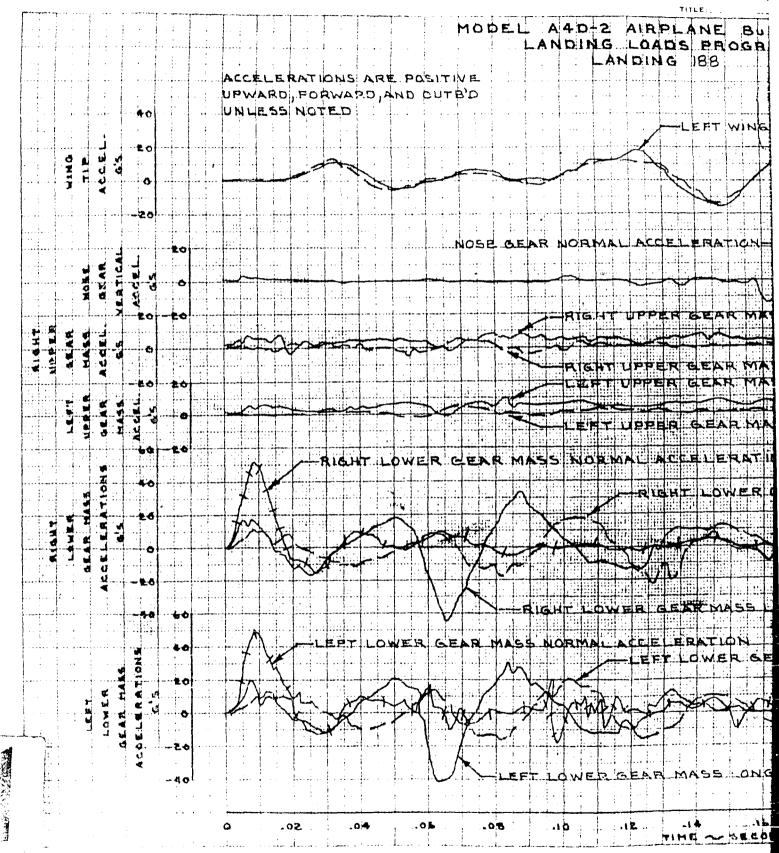


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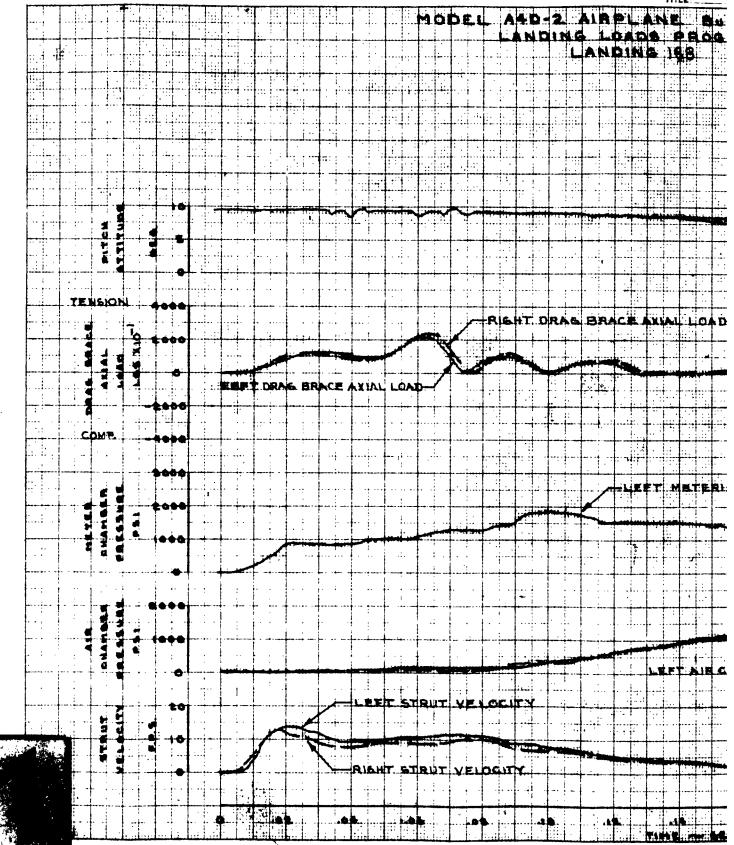
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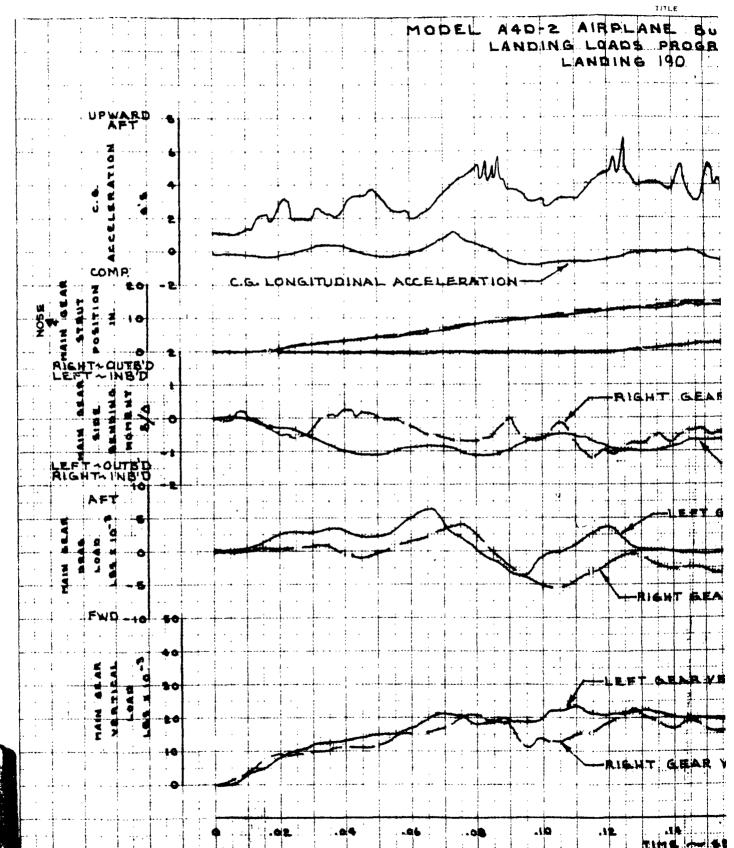
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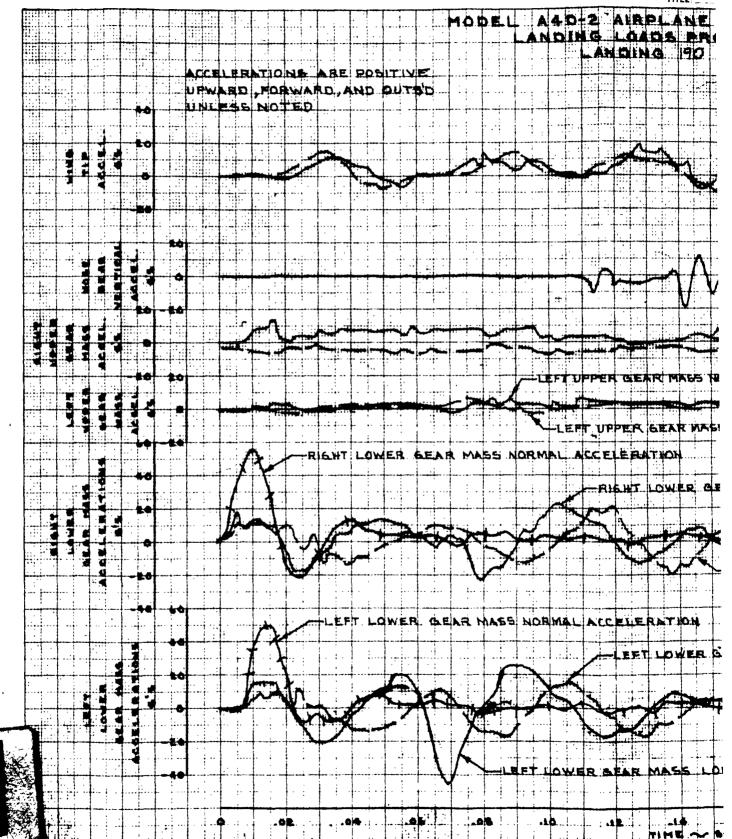
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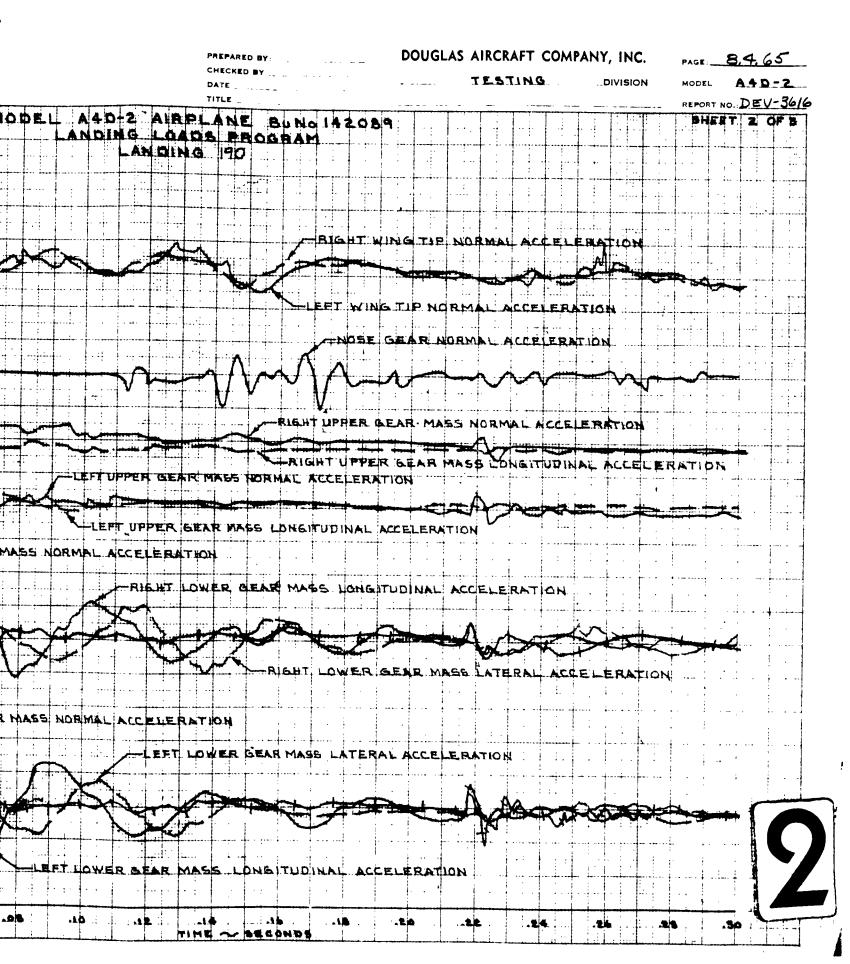


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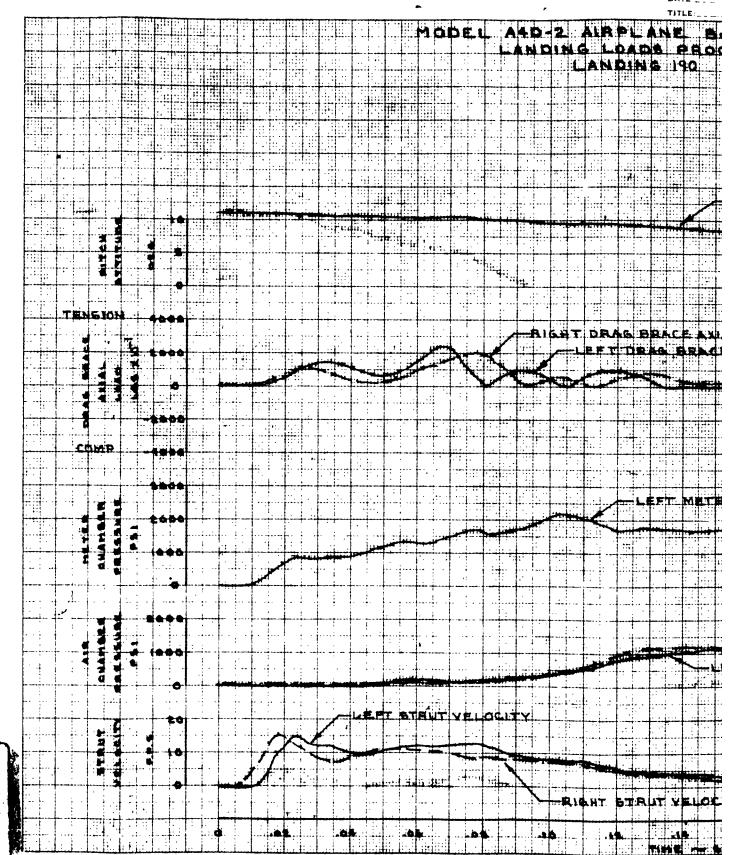
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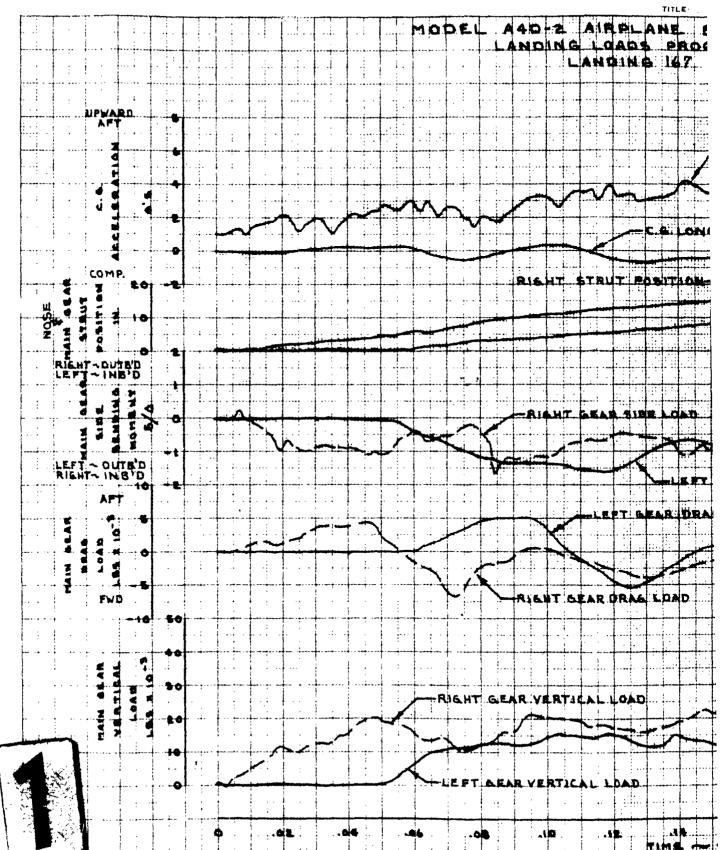
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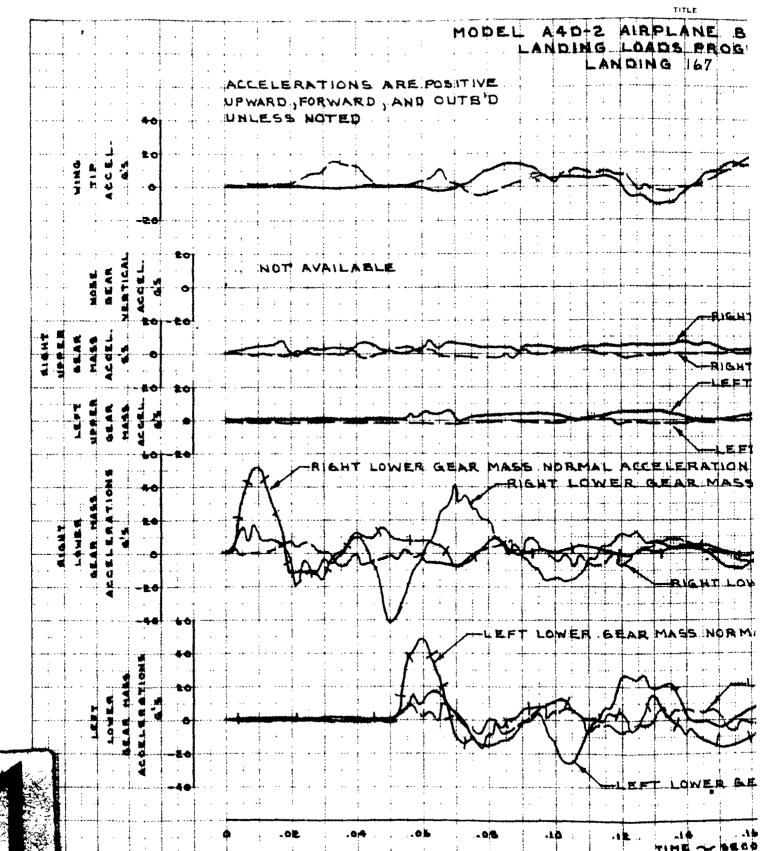


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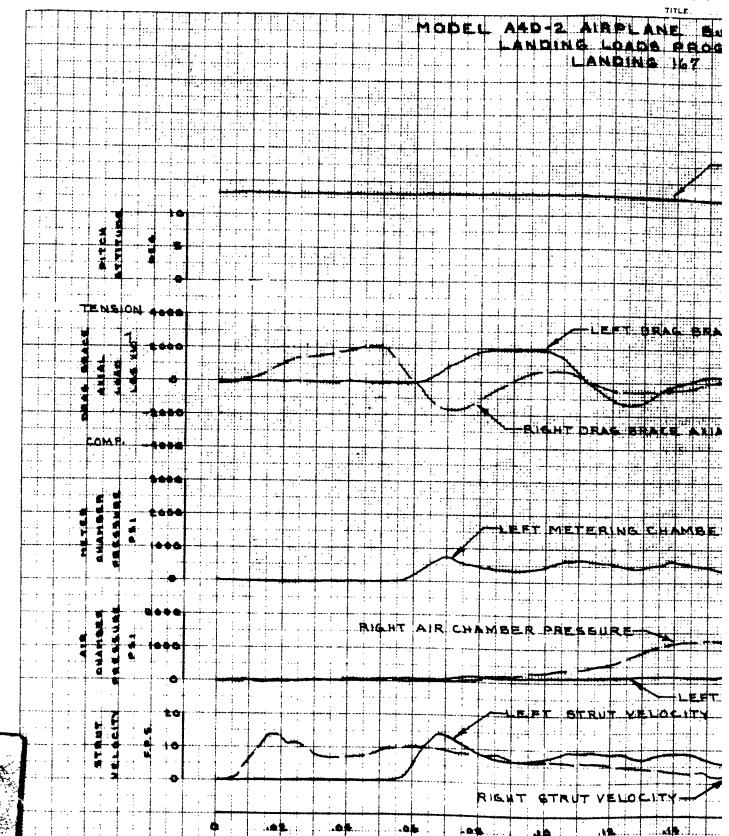
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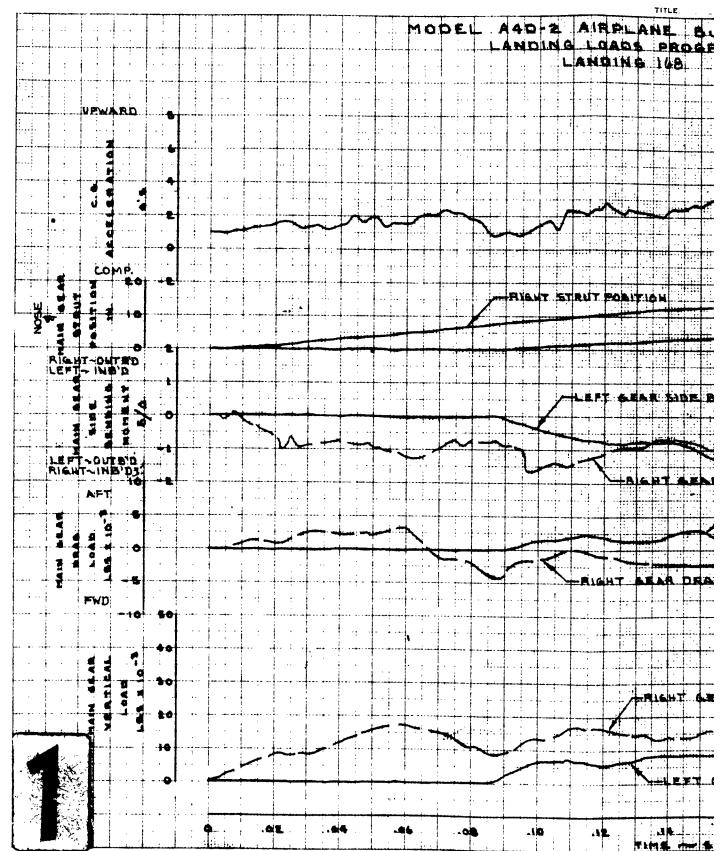
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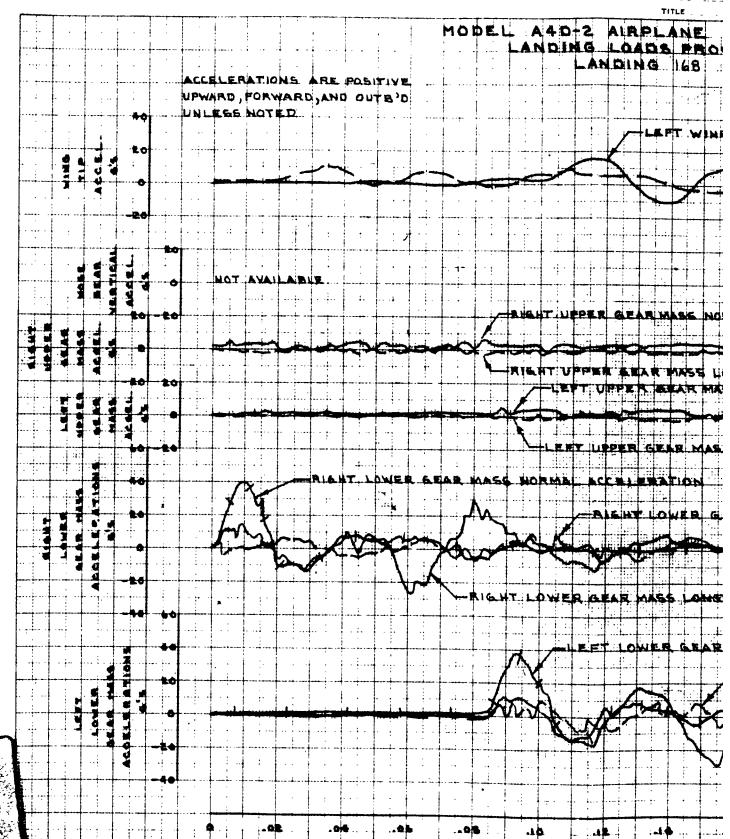


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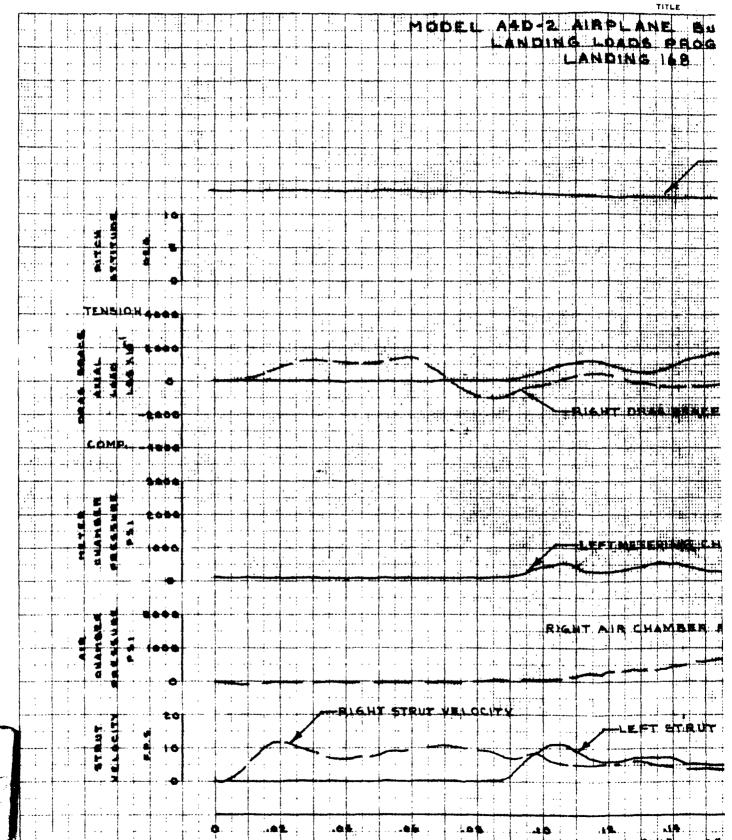
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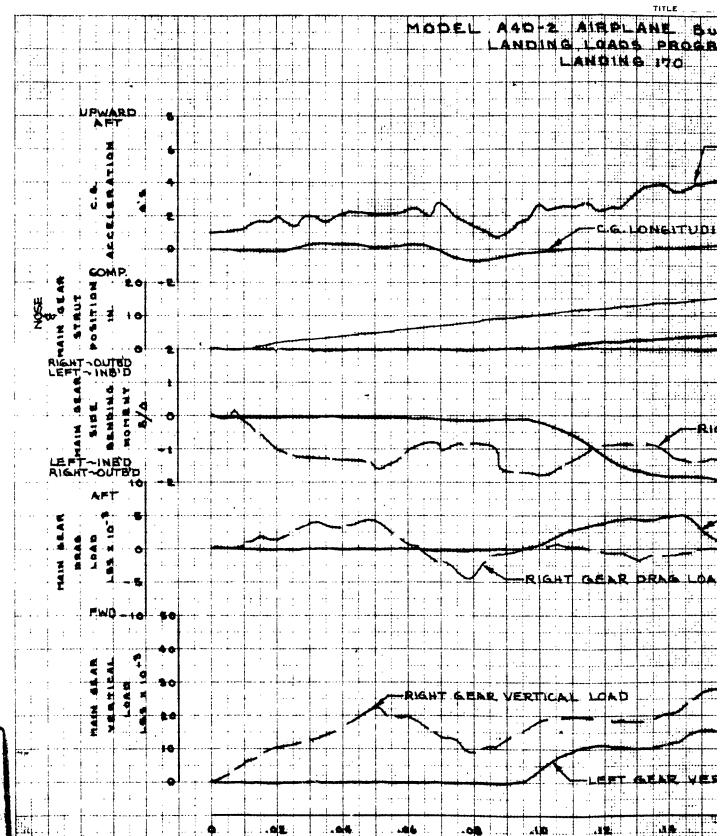
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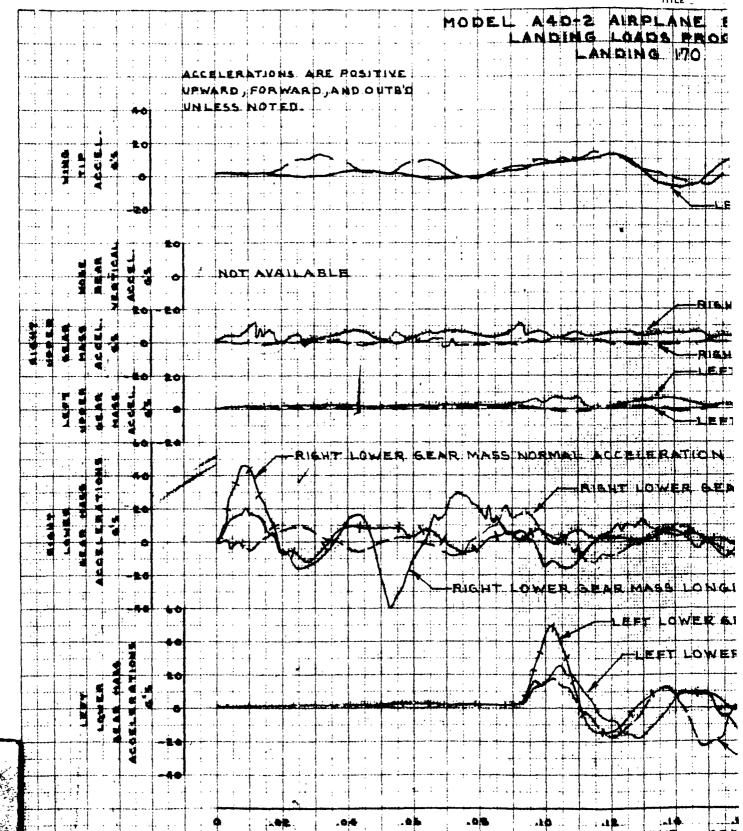


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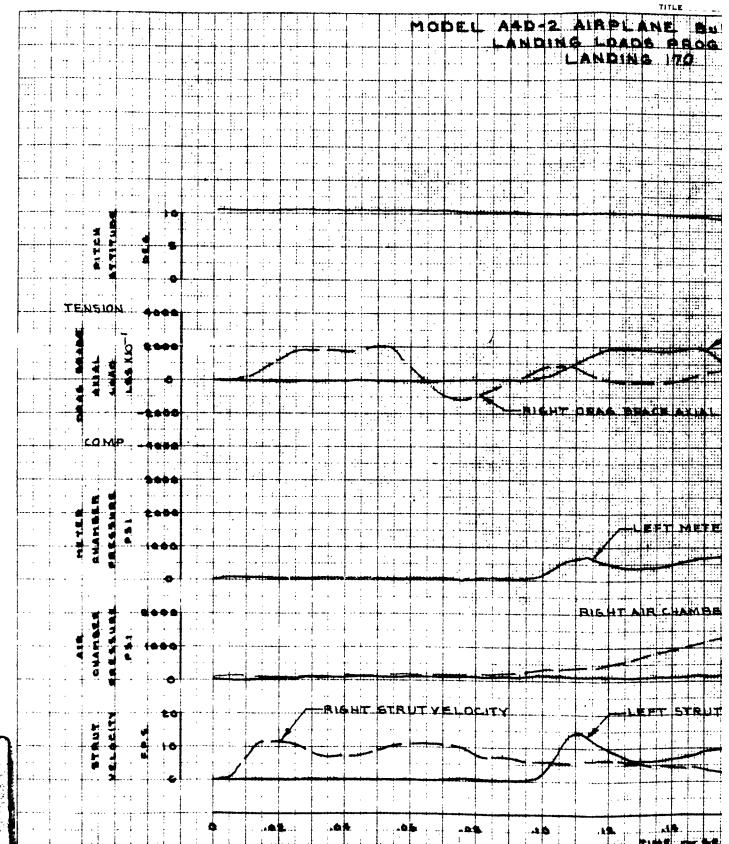
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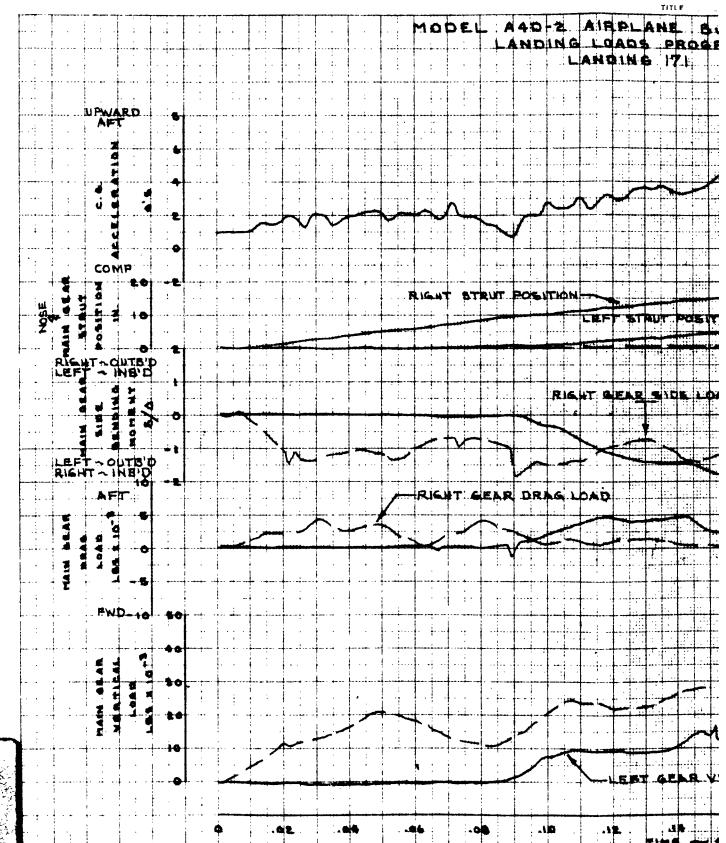
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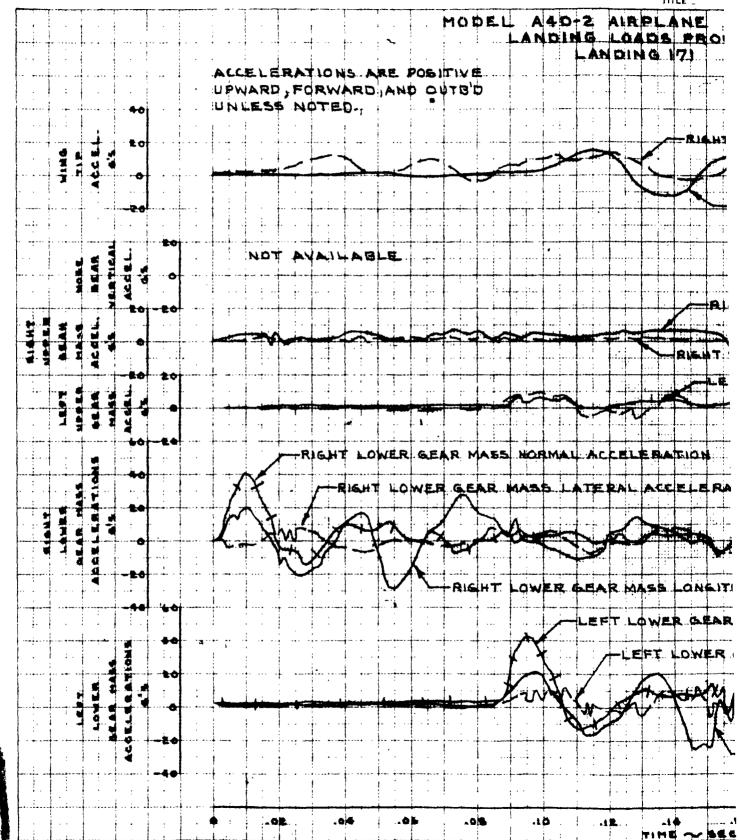
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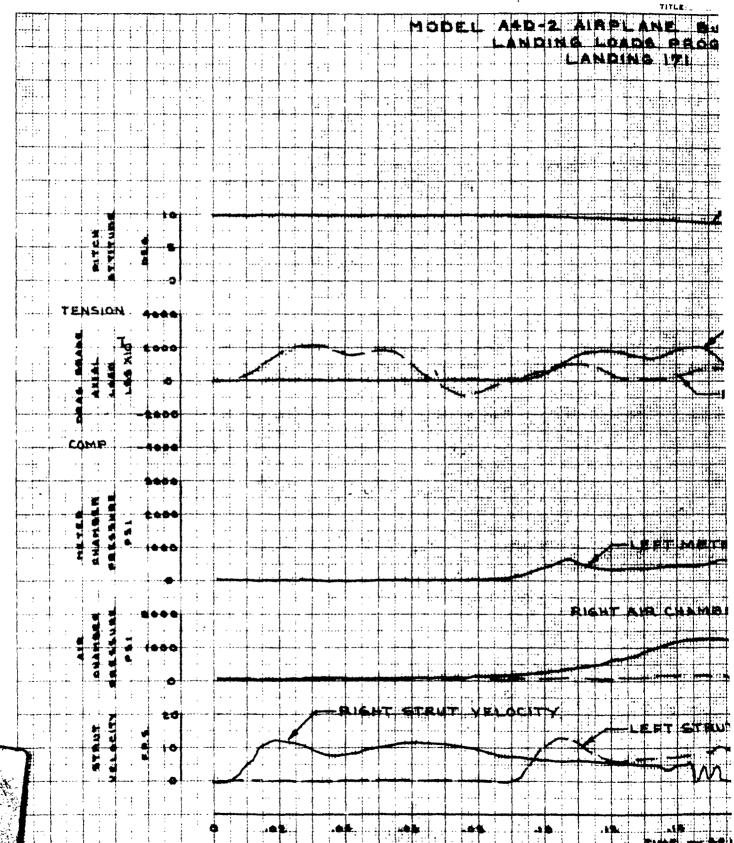
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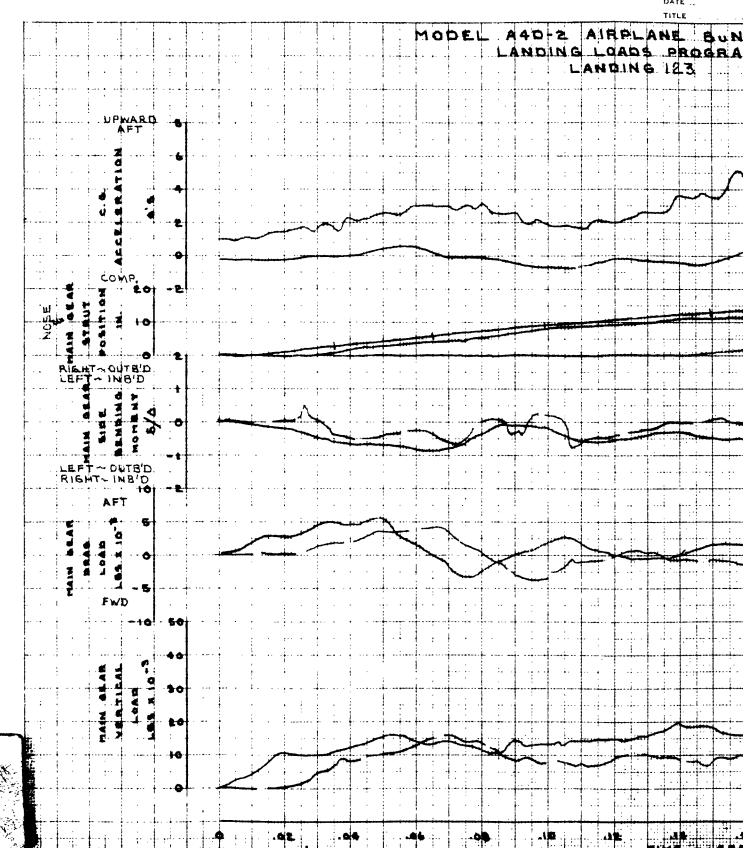
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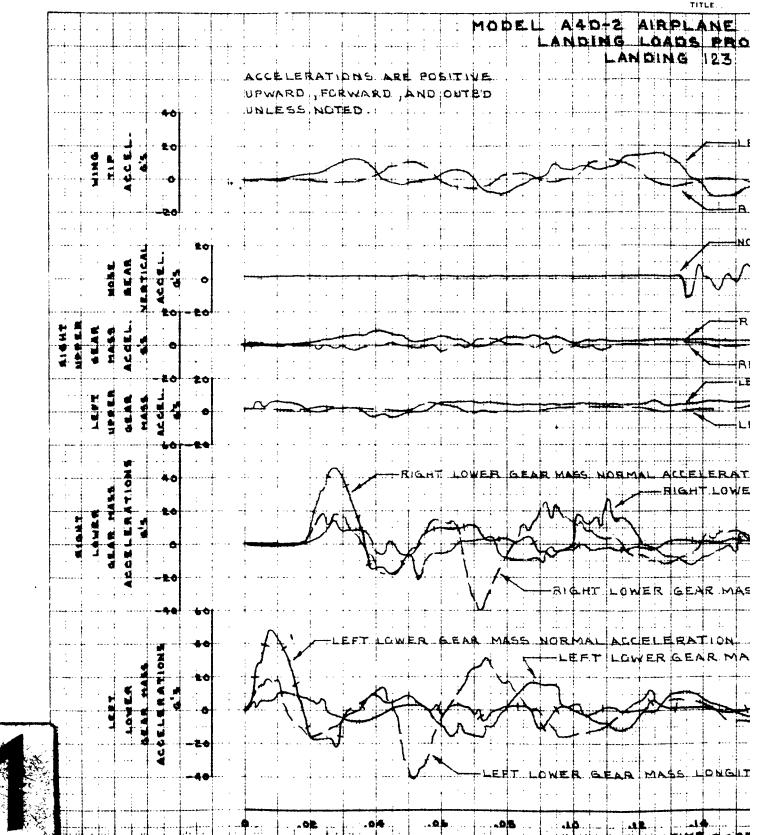
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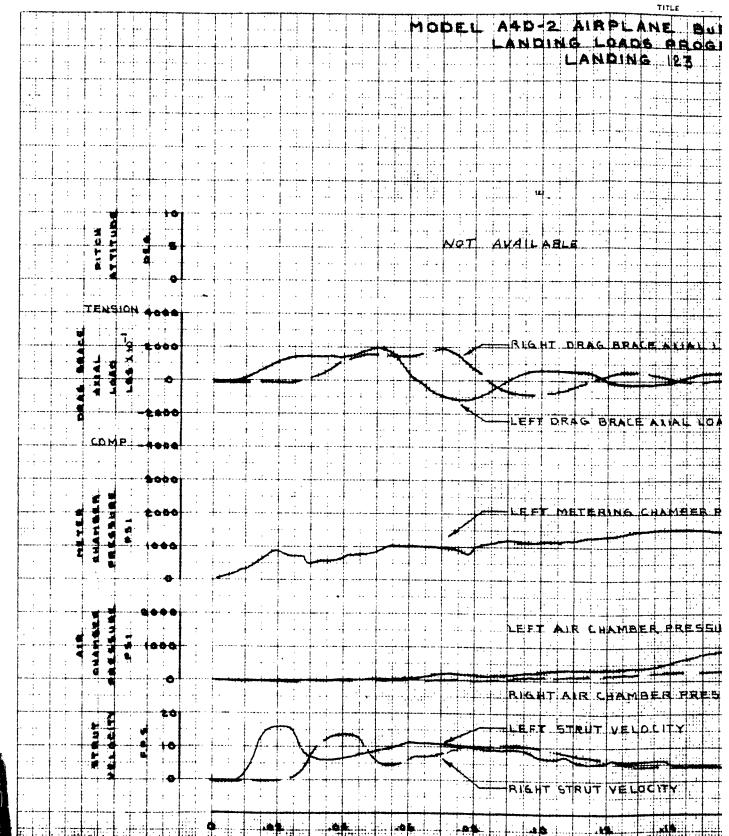
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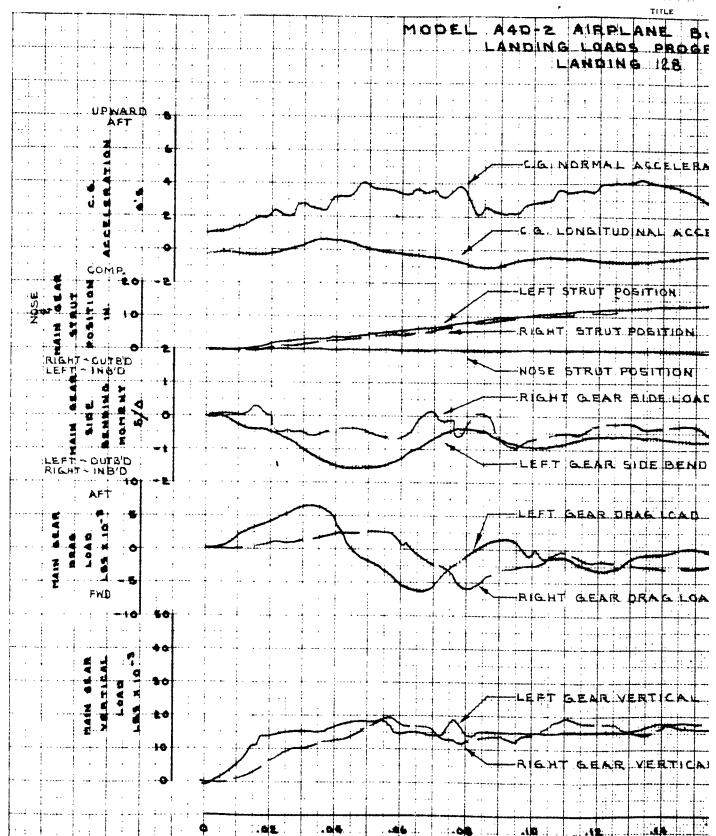
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DOUGLAS AIRCRAFT COMPANY, INC. PREPARED BY PAGE: 8.4. 8/ TESTING .... DIVISION MODEL . A4D-2 TITLE REPORT NO DEV- 36/6 EL AID 2 AIRPLANE BUNG 142089 SHEET 3 OF 8 LANDING LOADS BROGRAM LANDING 123 OT AVAILABLE RIGHT DRAG BRACE ALVAL LEFT DRAG BRACE ANAL HOAD FT METERING CHAMPER PRESSURE LEFT AIR CHAMBER PRESSURE RIGHT AIR CHAMBER PRESSU LEFT STRUT VELOCITY RIGHT STRUT VELOCITY

PREPARED BY CHECKED BY DATE

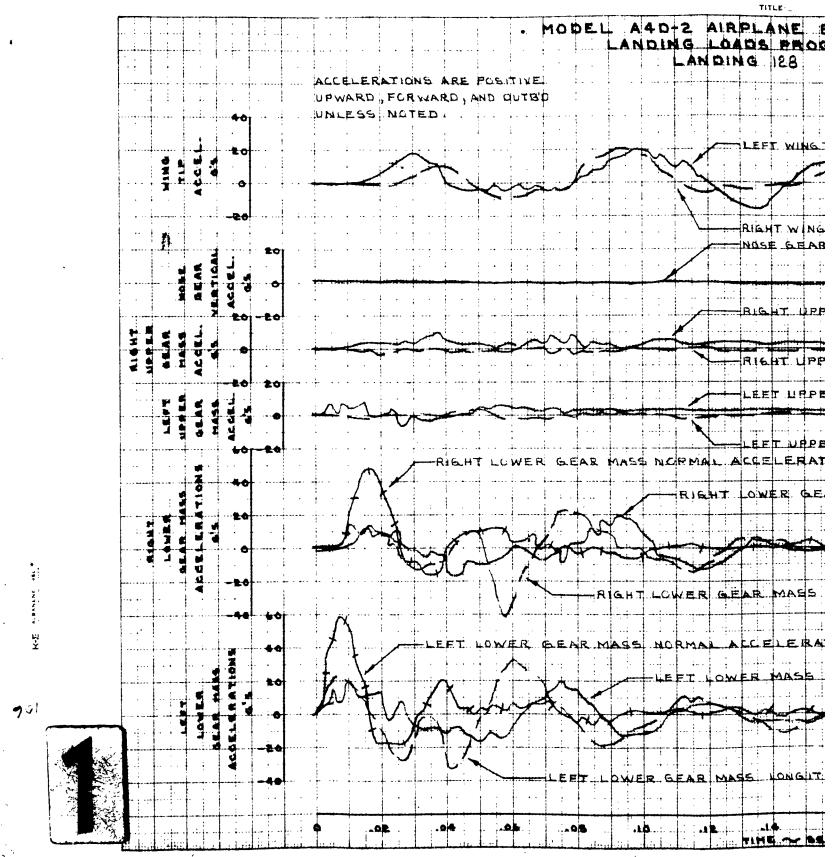


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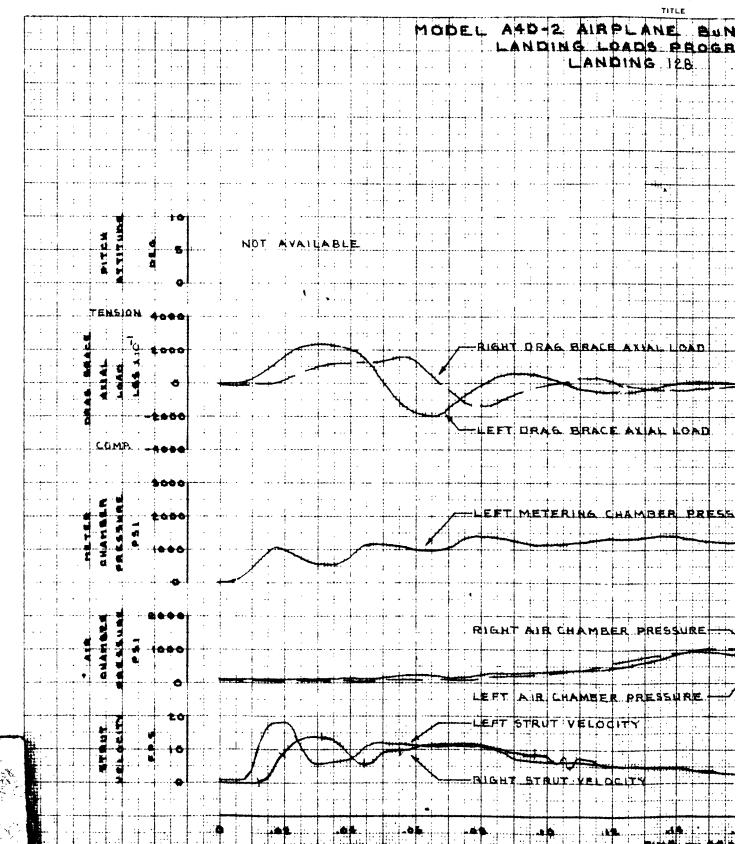
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DOUGLAS AIRCRAFT COMPANY, INC. PAGE 8.4.82 PREPARED BY CHECKED BY TESTING . . DIVISION MODEL A49-2 DATE REPORT NO .: DEV-3616 DEL A4D-2 AIRPLANE BUND 142089 SHEET I OF 3 LANDING LOADS PROGRAM LANGING GENR LOADS ARE STRAIN LANDING 128 GAGE LOADS MEASURED PARALLEL AND PERPENDICULAR TO THE STRUT CENTER LINE -CIGI NORMAL ACCELERATION C.B. LONGITUDINAL ACCERATION . -LEFT STRUT POSITION: -RIGHT STRUT POBITION HOSE STRUT POSITION RIGHT GEAR BLOS.LOAD LEFT GEAR SIDE BENDING MOMENT LEFT GEAR DRAG LCAD RIGHT GEAR DRAG LOAD LEFT BEAR VERTICAL LOAD RIGHT GEAR VERTICAL LOAD



DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8,4.83 PREPARED BY. CHECKED BY \_ . . TESTING ... DIVISION MODEL: A4D-2 DATE PEPORT NO DEV-3616 MODEL A40-2 AIRPLANE BUNG 142089 SHEET & OF 3 LANDING LOADS PROGRAM LANDING 128 EFT. WING TIP NORMAL ACCELERATION: RIGHT WING TIP NORMAL ACCELERATION NOSE GHAR NORMAL ACCELERATION ; RIGHT UPPER GEAR MASS HONGITUDINAL ACCELERATION . LEET LIPPER GEAR IMASS NICEMAL ACCELERATION LEET UPPER GEAR MASS LONGITUDINAL ACCELERATION GEAR MASS NOPMAL ACCELERATION RIGHT LOWER GEAR MASS LATERAL ALCELERATION RIGHT LOWER GELAR MASS LONGITUDINAL ACCELERATION EAR MASS HORMAL ACCELERATION LEFT LOWER MASS LATERAL ACCELERATION EFT LOWER GEAR MASS YONG TUDINAL ACCELERATION

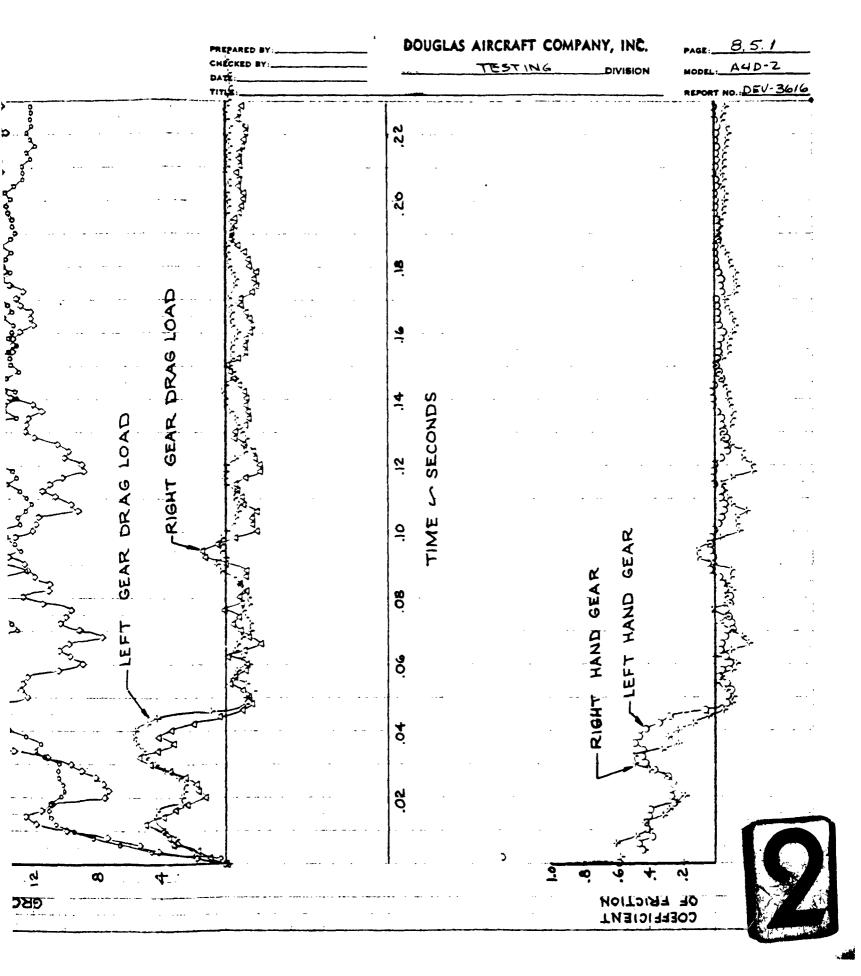


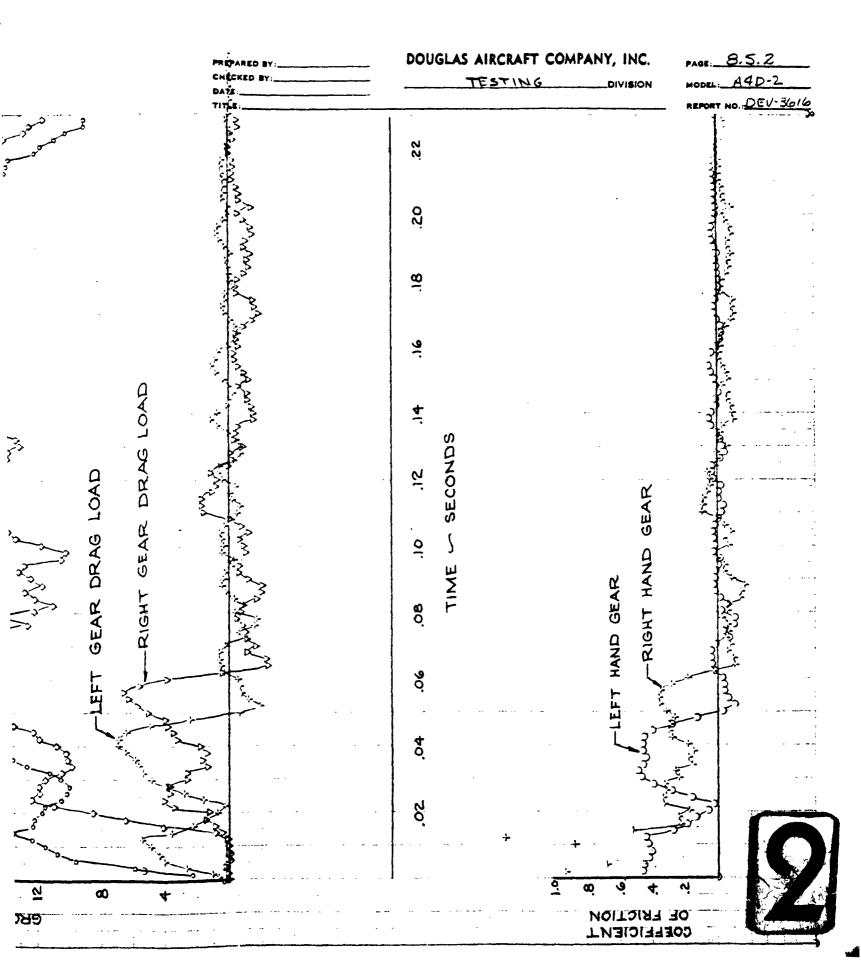
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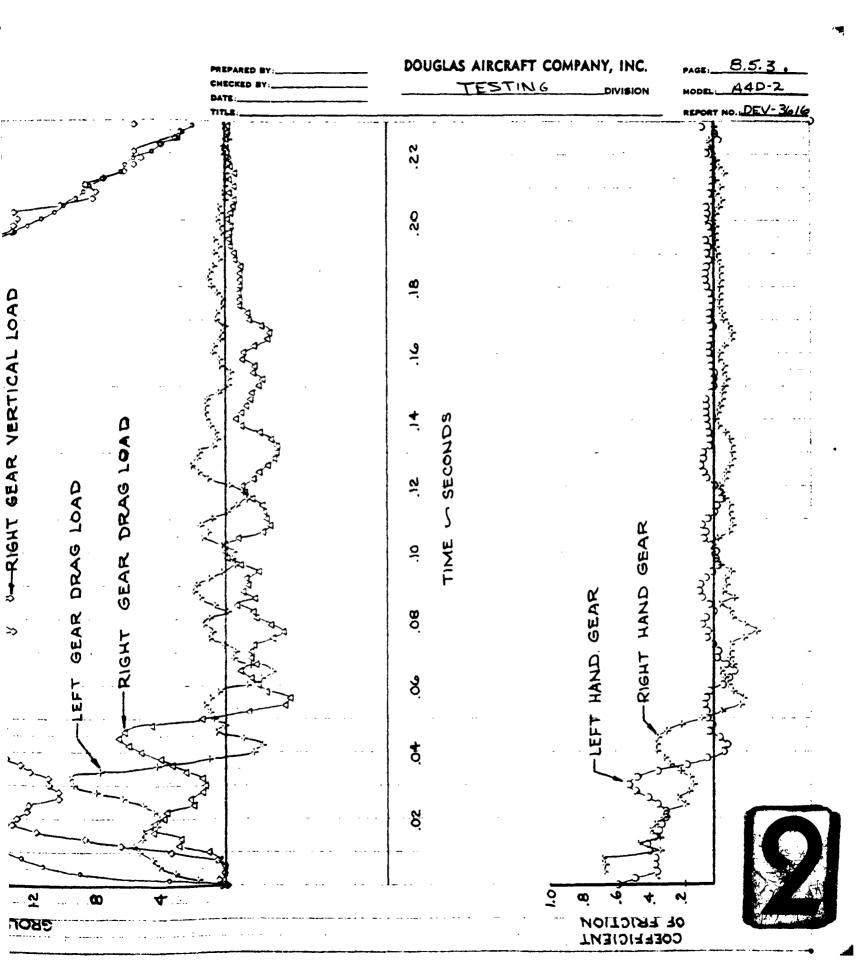
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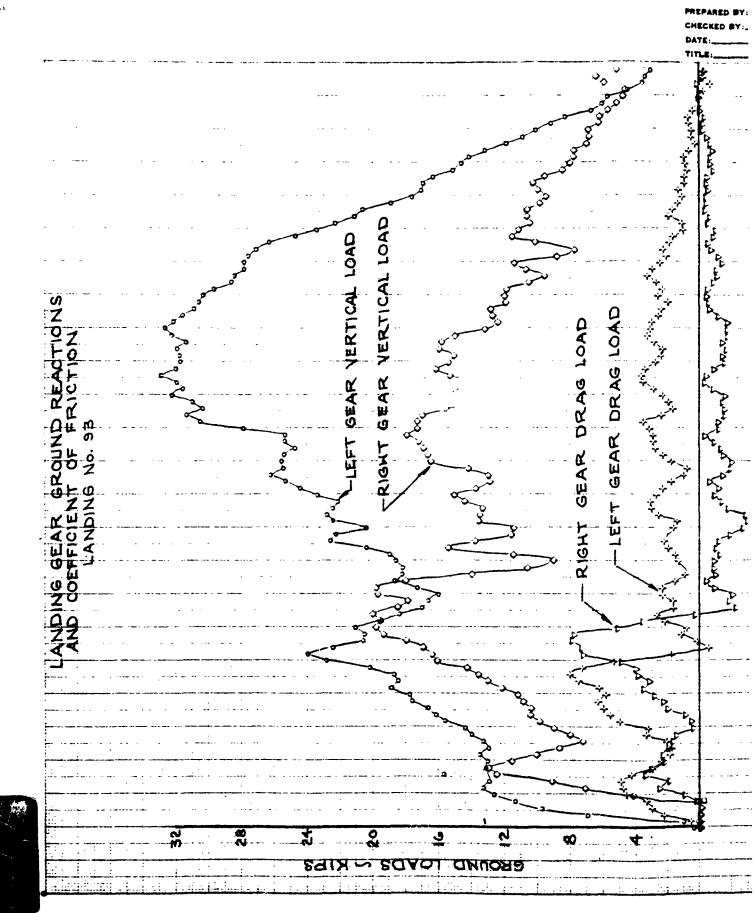
DOUGLAS AIRCRAFT COMPANY, INC. PREPARED BY CHECKED BY TESTING ... A4D-2. DATE REPORT NO. DEV-36/6 SHEET B OF B EL ALDIZ AIRPLANE BUNG 142089 LANDING LOADS PROGRAM LANDING 128 RIGHT DRAG BIRACE AXVAL LOAD LEFT DRAG BRACE ANAL LOAD EFT METERING CHAMBER PRESSURE RIGHT AIR CHAMBER PRESSURE LE FT AIR CHAMBER PRESSURE -LEFT STRUT VELOCITY RIGHT STRUT VELOCITY

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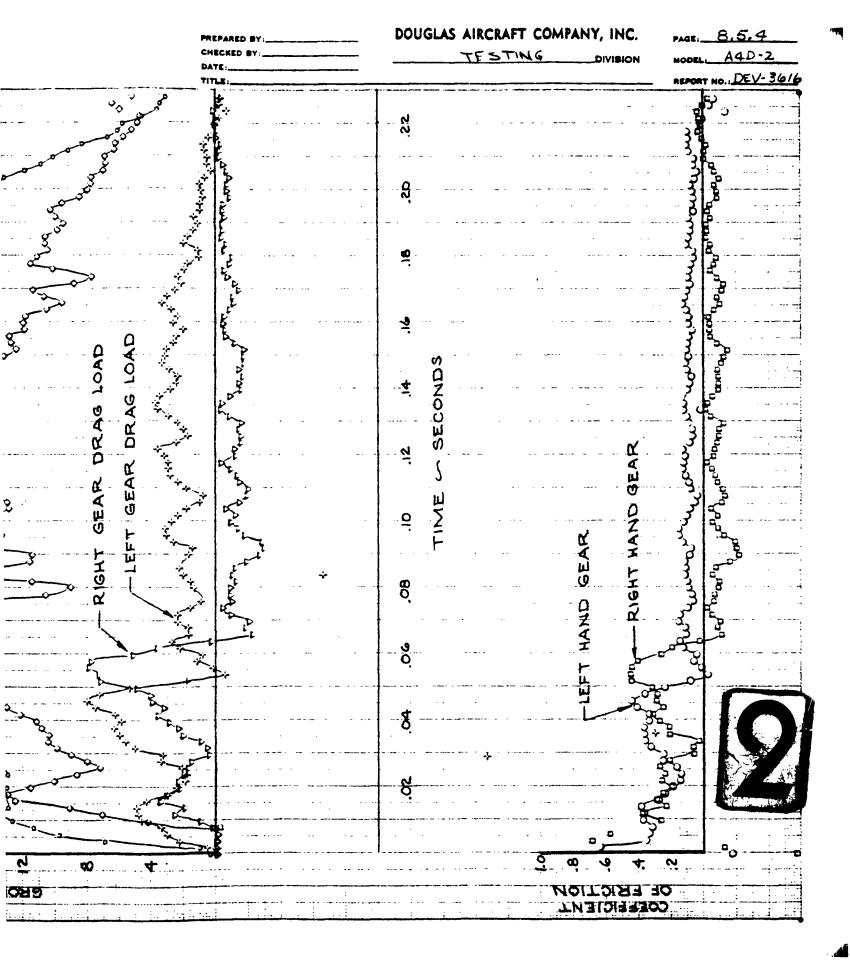


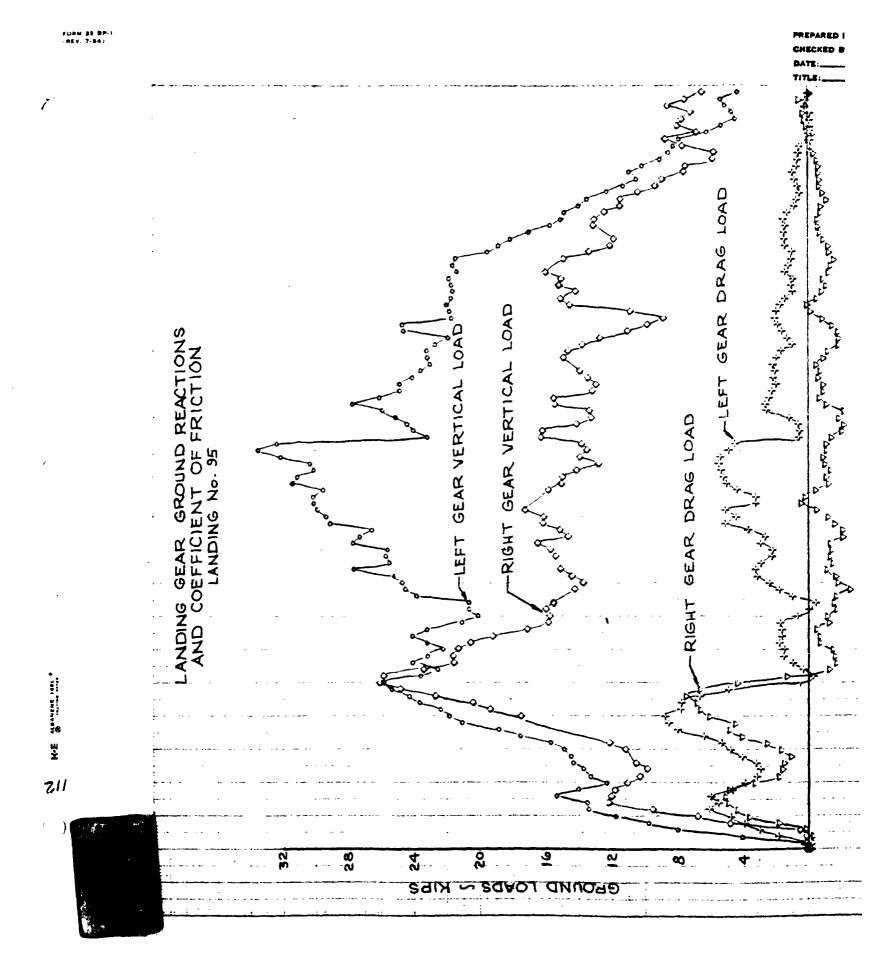


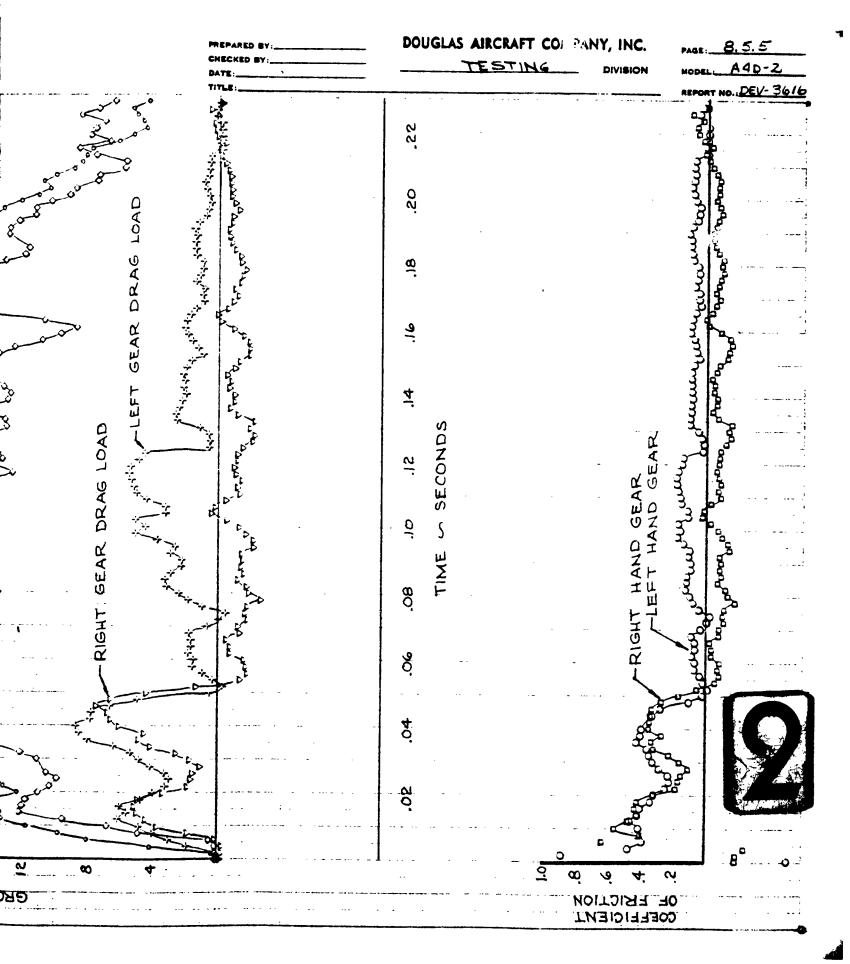


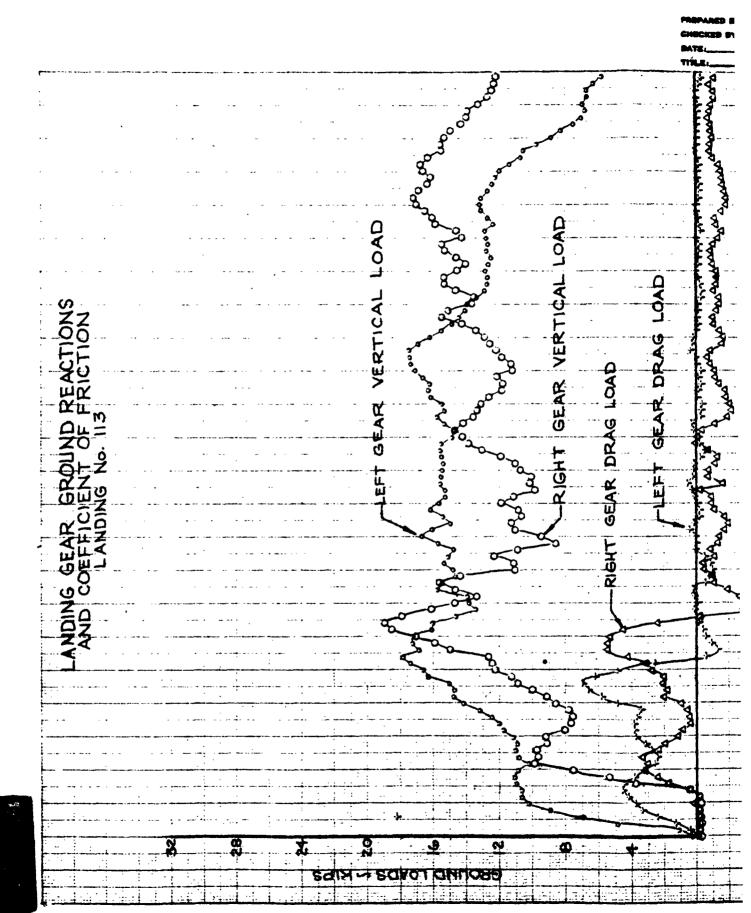


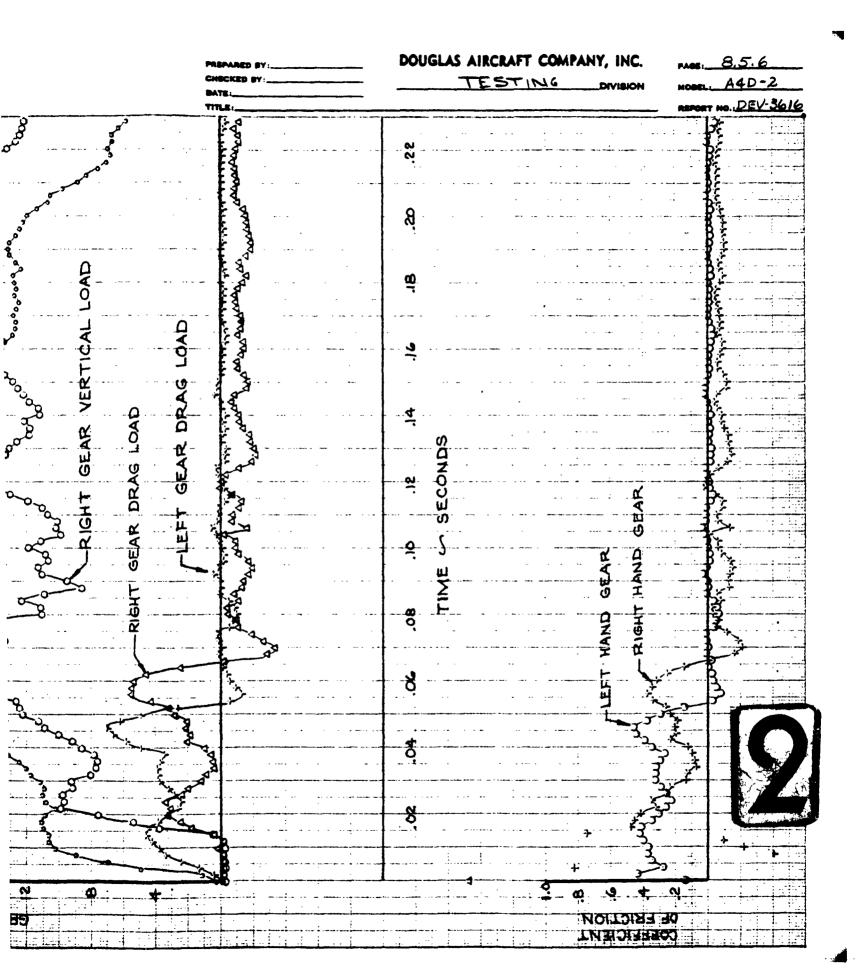
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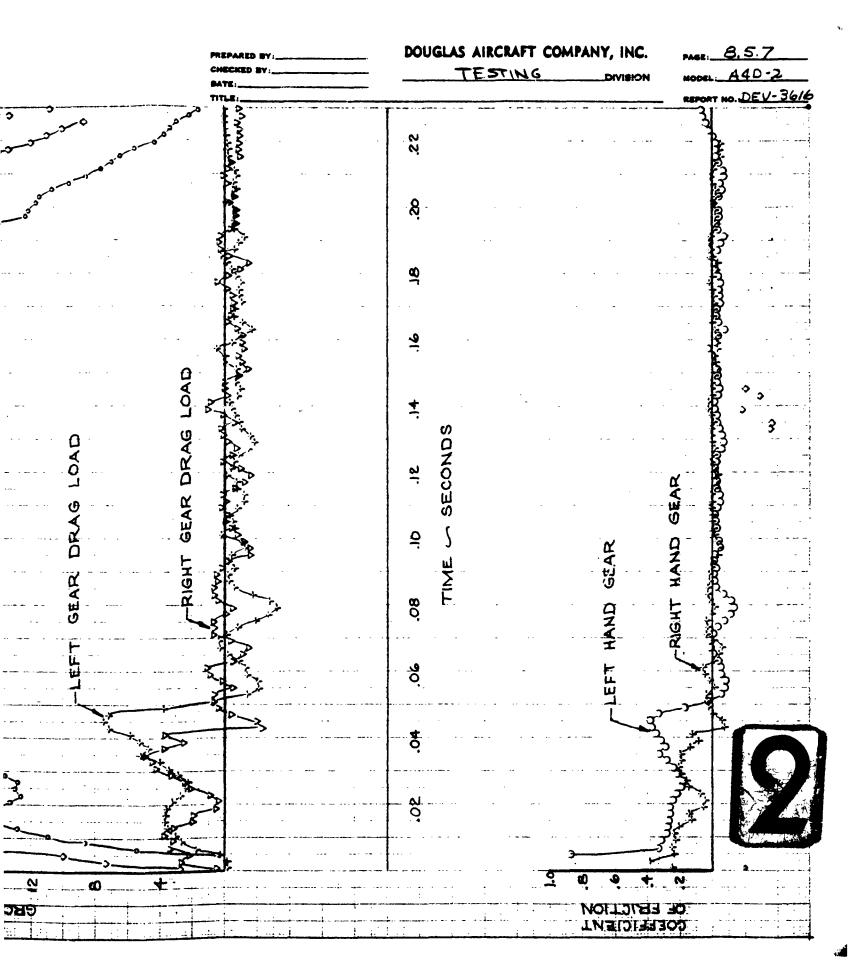


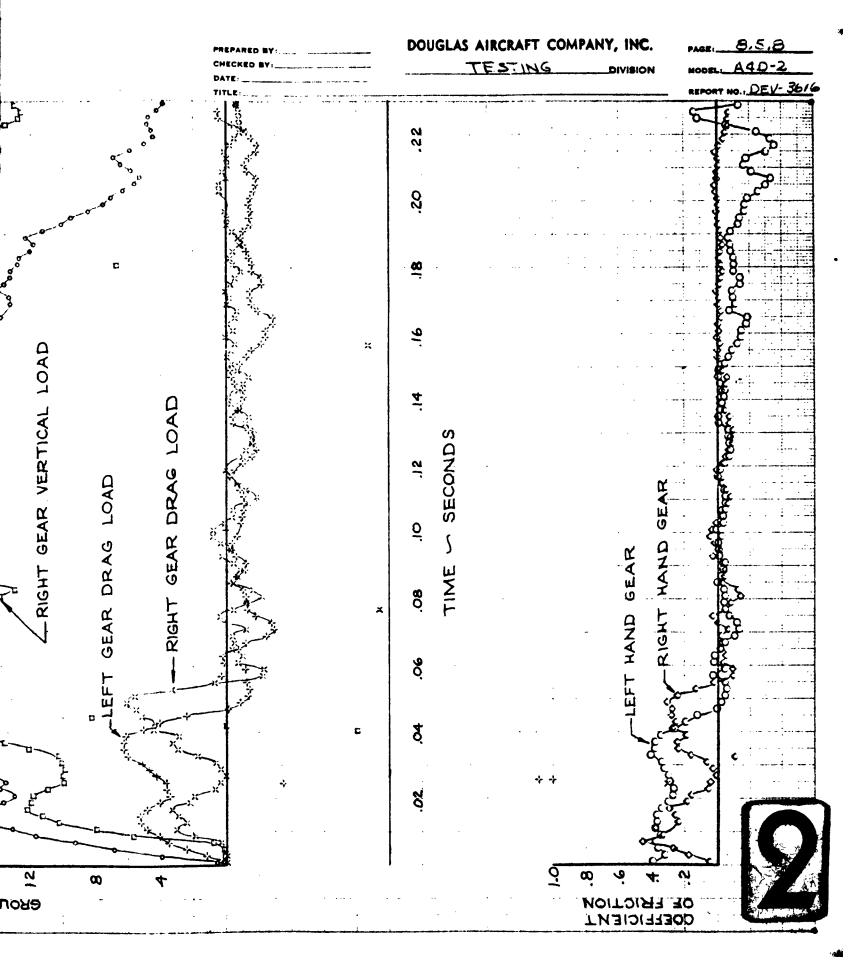






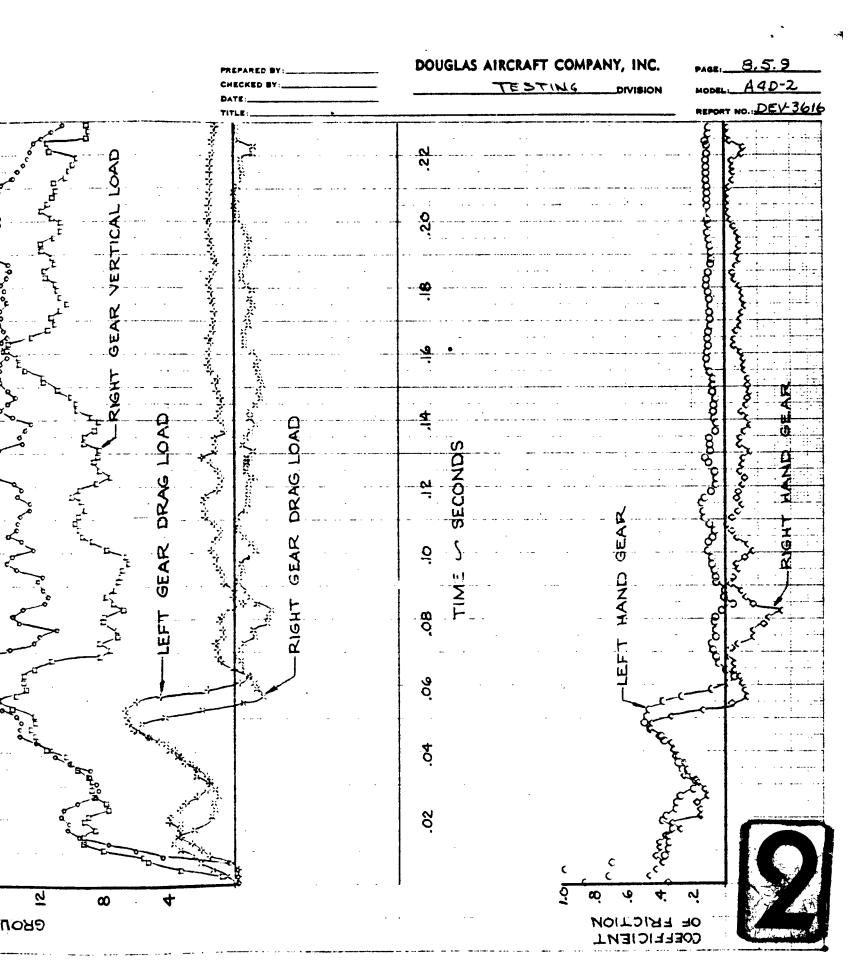


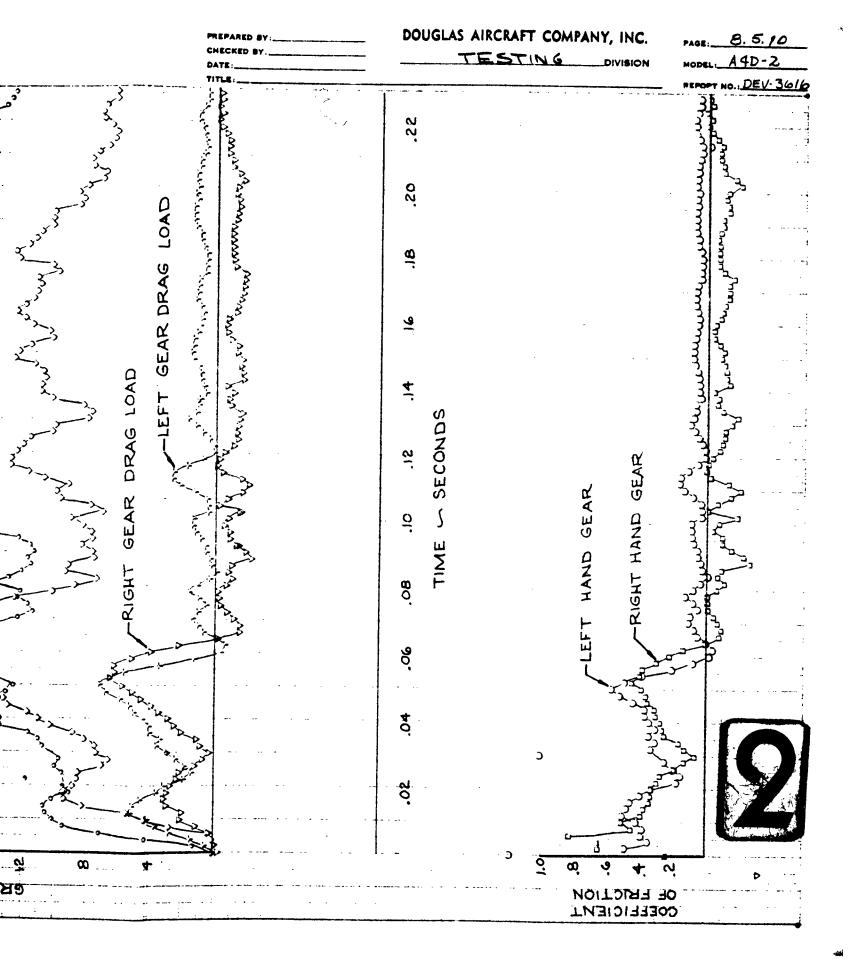


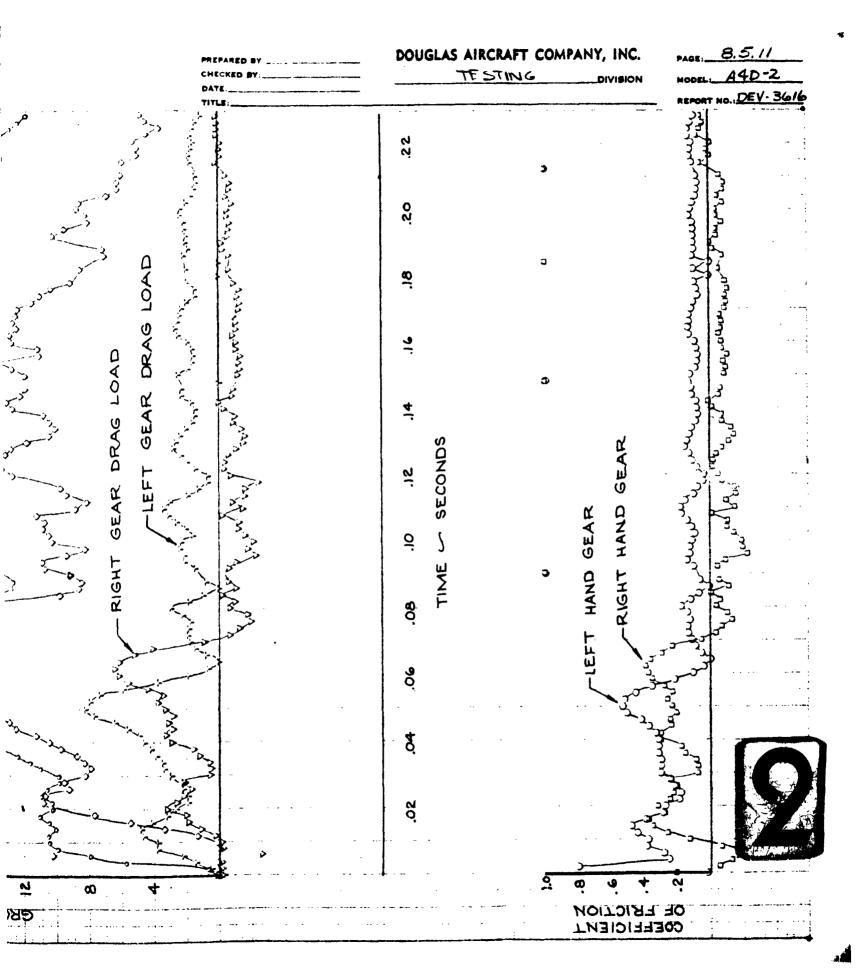


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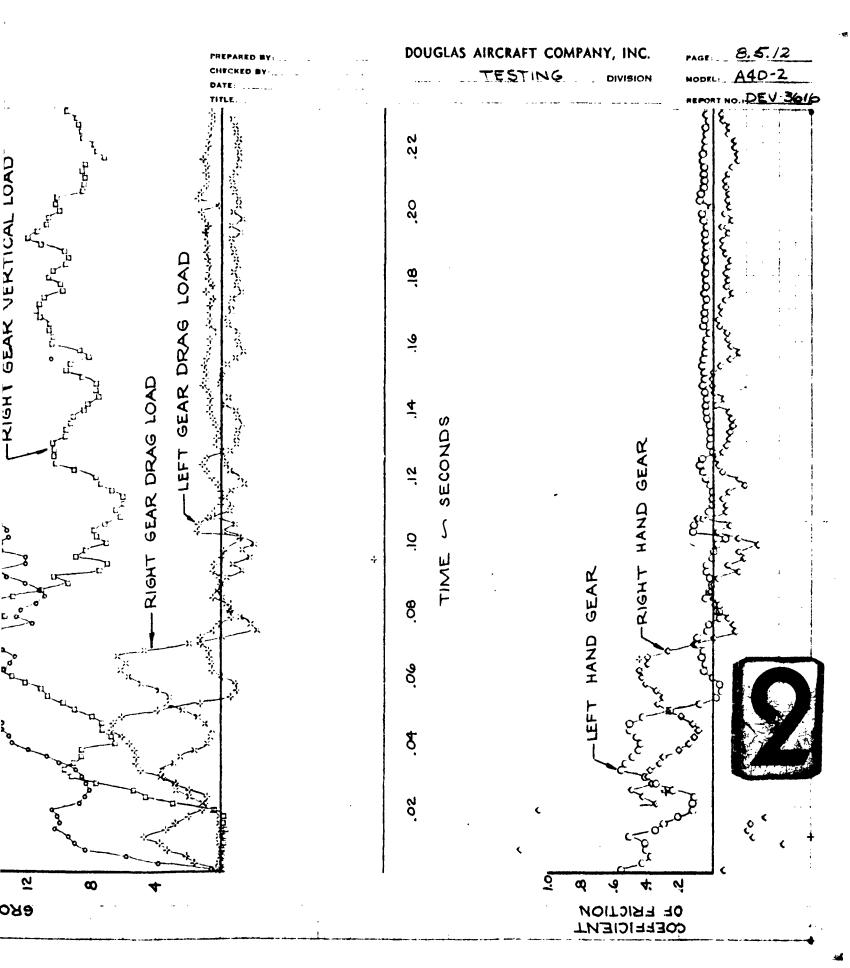
GROUND LOADS - KIPS



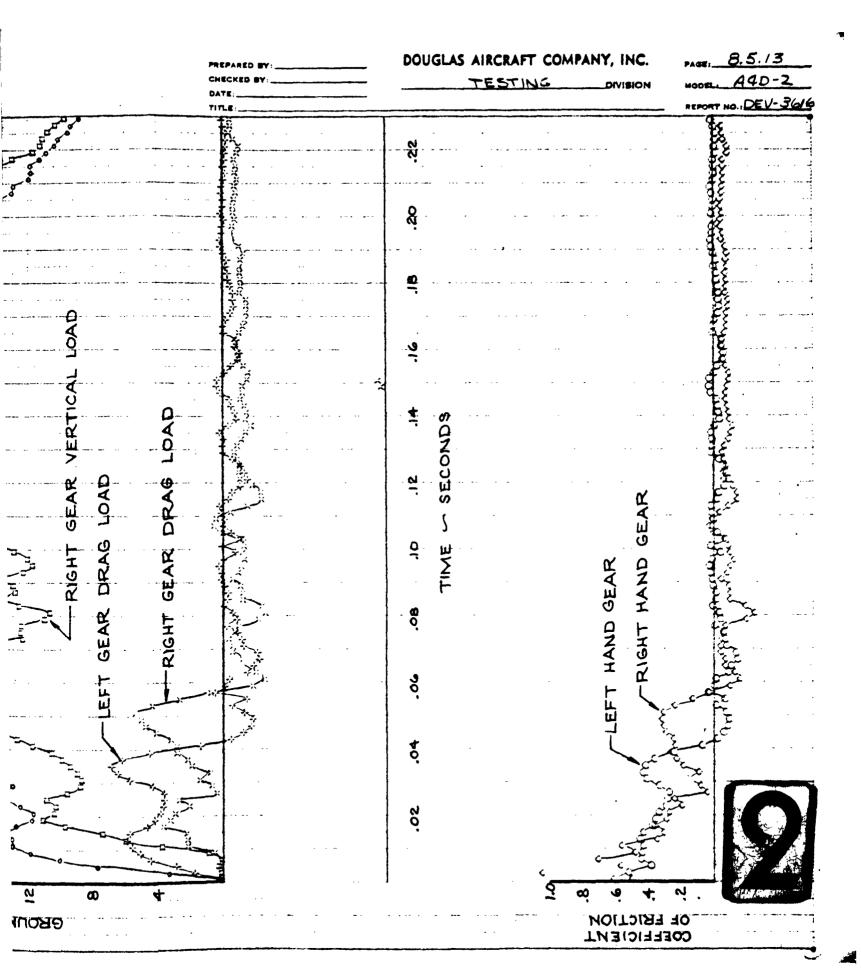




#<del>\*</del>



GROUND LOADS KIPS



Landing	Number	/	2	3	4	5	6	7	8	9
Date		9-8-60	9-8-60	7-6-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60
Satisfa	ctory						, an e-e-		YES	
	on Letter								В	
Configu	·	<b>4</b>					INSTR	UMENTA	100 STO	RE ON
	naining (LES)	3120	2910	2750	2570	2360	2160	3050	2910	7750
	eight (LBS)	13725	13515	13355	13175	12965	12765	13655	13515	13355
Runway	_	NOW-SKID							<u> </u>	
	Angle (DEG)	31/4	314	314	51/4	31/4	3/4	3 1/4	314	314
	rs)/Dir. (Dir	5 315	315	5 315	315	5315	5 315	5 90	5 90	5 90
_	Temp °F	75-80	75.80	75.80	75-80	75-80	15-80	90	90	40
Laft Who	eel   Tan-	, =	20.5	.28	45	25	-33	3	-/4	-7
T.D. Ro	to Lata		ZZ	0	3 R	1 12	0	3/2 R	3_R	3 R
TWWAT	al TD Rel to	_	_	_				_		-
	TRODI #1	-	15.3	14.5	14.8	-	-	14.4	15.2	16.0
32/·	TRODI #2	-	16.0		_	_	_	· _	, -	14.2
31nk \	TRODI#3	]	14.6	14.0	140	14.5	<u>_</u> •	11.7	120	12.5
Speed \ PT/SEC			_	11.3	11.5	12.5	<u> </u>	10.0		
	TRODI #4 Mitchell Left Wheel	ميستر	169 37	13.3 142	13.5	160110	13:13.7			-
	Mitchell Right Wheel	ميستر	19.7		13.5/30	16.0	13.7		ميستر	
	Photoscope			<u> </u>	i	1	Î		11.0	
Horiz.	SPN-12	121	126	126	127	126	124	125	126	127
Speed	SODI	_	132.1	129.8	131.0	131.6	125.8		128.9	130.0
KTS	Mitchell	121.3	1321	130128.8	1314321	132.0	125.5	984	138.7	
	Photoscope				<u> </u>			· · · · · · · · · · · · · · · · · · ·	127.9	<u> </u>
_		13.						1	0.4 LOUS. 0.5(4) LAT	
Remark	rks	18					1	! !	0 3	i
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		3.							3	1
		'`		1					3	1

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Notes:

1) Fuel remaining read on down wind leg.
75 Las (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

Zero defined laterally as 6 of runway and longitudinally as a line 100 ft down runway from reference point of photoscope (see survey data).

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DIVISION

PAGE 8.6./ MODEL N4D-2 #089

DATE

TITLE LANDING LOADS INVESTIGATION

REPORT NO DEV-3616

	6	7	8	9	10	//	12	/3	14	15	16	17
٥٥	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60	9-8-60		9.860	*	9-8-60
			YES						,			
			В						_			
	INSTR	UMENTAI	NOW STO	RE ON	£							
<b>9</b>	2160	3050	2910	2750	2570	2360	2/60	3050	2910	2750	2570	2360
	12765	13655	13515		13175		12765	13655	13515		13175	12965
							•	CONCRETE				<del></del>
	31/4	3 1/4	314	31/4	31/4	31/4	31/4	3/4	31/4	31/4	3/4	31/4
5	5 315	5-90	5 90	5 90	5 90	5 90	5 90	10 135	10/35	10 135	10/35	10 135
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	-33	3	-14	-7	_	-	-4	. 2.1	17	-10	15	
6		3/2 R	3_R	3 R	_	_	ZR	3 R	6 R	48	5 R.	_
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		14.4	15.2	16.3	-		_	12.9	13.9	13.8	13.9	-
   	-	-		14.2	-	-	<u> </u>	13.2	•	-	_	-
	_	11.7	12,3	/z.5		-	14.0	10.0	11,5	12.5	11.0	_
	_	10.0	_	-	_	-		9.0	11.0	•	10.5	_
ن	13.7				10.7 9.8			-يرز	14.7	10.9	11.4	8.3/1.3
بر د ه	13.7		- ا		10.7 9.8	-	ب		14.7 10.8	10.9	11.311.6	8.3
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	124	125	126	127	128	129	126	126	126	125	/28	127
. j	125.8			130.0	92.7	133.3	_	129.9	131.1	-	134.3	_
./	1255.5	984	138.7		1281	سيسنر			126.8	1301794	125:57.4	133.5
			127.9							L		
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			<b>12</b>									

ned laterally as f of runway and nally as a line 100 Pt down runway rence point of photoscope (see survey

That I was also the server

(3) Location of TRODI
TRODI 1 Starboard Pud Port Wheel
23 Port Pud Starboard Wheel

Landing	Number	18	19	20	21	22	23	24	25	26
Date		9-8-60					-	9-13-60		
Satisfa	ctory									YES
Conditi	on Letter					ļ				3
Configu		-					- INS	TRUMEN	TATION	STORE
Fuel Re	maining (LūS)	2/60	3120	2990	2750	2570	2360	2990	2750	2570
Gross W	loight (IBS)	12765	13725	13595	13355	13175	12965	13605	13365	1318
•	Surface	CONCRETE		-				NON-		-
	Angle (DEG)	3/4			13		· :: . · · · ·			
	TS)/Dir. (Dir	135	125	135	135	135	135	0-3 225	0-3225	22
	Temp °F	\			<del>-</del>			79	,	
Left wh T.D. Re	eel Long.	31	/3	-/3	-17.	30	30	<u>+</u>	-10	-31
Zero 2	S LEFT FIRST	4 R	4 R	3.5 R	3 R	3 R	ZR	· <del>-</del>	3.5 L	8 4
Rt. Whe	el TD Rel to	5	3.S	12	2	3	8	<del>-</del>	<u>-2</u>	-/
_ []	TRODI #1		12.2	11.0	13.5	ļ	-	10.4	12.0	11.8
Sink	TRODI #2		- 		• · · · · · · · · · · · · · · · · · · ·	; <b>-</b> <del> </del>	<b>-</b>	· —	<del>-</del>	<del>-</del>
Speed \	TRODI#3		9.0	8.9	-	12.0	10.5	7.2		<del>-</del>
FT/SEC	TRODI #4 Mitchell	-	8.5	95	11.4	10,5	9,0	* 8.Z * 1.1 3	10.1	10.5
ŀ	Left Wheel Mitchell		11.0 10.5	a 2		10.8 12.0	11.2	114		13.9,2
	Right Wheel		10.5	8. 10.7	11.4 11.8	12.0	10.8 11.2	11.4	14.0/3.0	
	Photoscope The Abesi						<del></del>		-	11.4
Horiz.	SPN-12	125	12.6	126	125	124	125	124	/23	123
Speed	SCDI	130.8	130.3	130.2	128.5	128.3	129.9	1259	123.1	123.1
KTS	Mitchell	128.1	129.0	128,8	128.8	128.127.4	1294	1262	126.2	124
	Photoscope				, 			-		122.5
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Notes: Fuel remaining read on down wind leg. 75 Les (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

maket of any make the control of the

Zero defined laterally as f of runway and longitudinally as a line 100 Ft down runway from reference point of photoscope (see survey data). (3

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PREPARED BY CHECKED BY

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DIVISION

PAGE 8.6.2 MODEL NAD-2 "089

DATE TITLE

REPORT NO DE V. 3616 LANDING LOADS INVESTIGATION

2	23	24	25	26	27	28	Z9	30	31	32	33	34
	-	9-13-60										-
Ì				YES		1						<del> </del>
_		, 		<b>3</b>								
		i		STORE S								-
0	2360	2990	2750	2570	2360	2260	-	3180	2990		7570	2 260
5	12965		13365	13185		12875	; 	13795	13605	13365	13/85	12875
		PRID .			CONCRETE	CONCRETE	NON SKID					
	13	2.5	0-5	.5	0.325	مر 5:۵	0.5	سنرد، برا	حرر دریار	سر دری	حند ذرن	0,10
25	135	225	0.8252	225	0 325	225	225	1	5-100	180	3/180	5-10
+		71	<del></del>				-	80	,		<del> </del>	
<del>-</del> +	30	·	-10	-31	- 45	38	ļ. <del></del>	-/5	42	-4	; <b></b> †	-6
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+	8		<u>-2</u>	-/	<u>.                                    </u>	-5	· —	. 3		-1,5	! -	5
<u> </u>		10.4	12.0	118	11.0	<del>-</del>		128	103	8.2	101	9.0
· <del>+</del>				<del>-</del>			<b>, -</b>		<b>.</b>			<del>-</del>
· -	10.5	7.2		-	• • • • • • • • • • • • • • • • • • •	7.5	••• · · · · · · · · · ·	<u> </u>	<u>6.7</u>	5.0	· -	5,5
-	9.0		10.1		: — : •:	95	. =.,,	. 12.0	3.6	<u>, 65</u>	1,8	73
				139,23			<u> </u>			13.5.92	11.10.7	
.0	10.011.2	11.11.4	14. 13.0	139 123	* -			13.6	_ 11.5	13.3 8.2	11.207	-
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<b>(</b> )	125	124	/23	123	. 124	, 126	. <b>-</b>	. 126	, 126	127	. 126	126
ا_3.	129.9	-	123.1	م. و ۵۰۰ میرانی پیسم	123.8	<u> </u>	<u>.</u>	1238		- 2. X	; <del>-</del>	126.1
7.4	129.4	124.9262	121.126.2	123 124.3	120,237			128.1308	120/23.1	128.8	160/201	
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ned laterally as f of runway and nally as a line 100 ft down runway rence point of photoscope (see survey

(3) Location of TRODI TRODI #1 Starboard Fwd Aft. Starboard Wheel

Landing	humber	35	36	37	33	39	<b>4</b> ∂	41	42	43
Date		9-13-60	7-14-60							
Satisfa	ctory						ļ <u> </u>			
Conditi	on Letter							•		
Configu	ration	-					INSTR	UMENTA	104. 5	TORE
Fuel Re	maining (LBS)	2070	3,50	2910	2750	2570	2360	2160		-
Gross W	leight (LBS)	12685	13665	13525	13365	13185	12975	12775	~	_
Runnay	Surface		CONLRETE	CONCRETE	CONCRETE	NON-	ļ		-	_
Mirror	Angle (DEG)		33/4 -			٠٠٠٠ =				
Wind (K	TS)/Dir. (DEC	5:13	9-10 300							•
Ambient	Temp °F	80	66							<u> </u>
Left Wh	eel Tons	-	7	3	18	-6_	<u> </u>	- 32	-	
T.D. Re Zero 2	(PT) Let	<b>-</b>	146	154	154	1 4	ຸ່່ງ	LR	_	-
A INDICAN	al ID Ral to	-	-5	- 3	-3	25		4.5	-	
ſ	TRODI #1	_	134	142	12.8	1=4	14.8	-	<u> </u>	-
3/	TRODI #2	_	10.5	12.4	7.4	108	10.8	8.9	-	
Sink \	TRODI#3		9.6	100	8.5	100			-	<u> </u>
Speed \ FT/SEC	TRODI#4	_	11.5	11.7	105	114	/2.5	9.0	_	
·	Laft Wheel					j - 				
	Mitchell Right Wheel				_				<del>-</del>	
	Photoscope				· •					
Horiz.	SPN-12	_	110	111	108	111	112	111	-	
Speed	SODI	-	1097		108.4	-	113.8	111.0		
KTS	Mitchell	-				]			-	
	Photoscope	-			· •			·	- -	
Rema	arks	ATTENITO TAKI-NU ARRESTIALUT - MISSED WIME						· .	ATTEMPTEU TARITUM MARESTMENT MISTEU WIE	TAXI. IS AREESTMENT

FORM 28-9 &

Fuel remaining read on down wind leg. 75 LuS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

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Zero defined laterally as f of runway and longitudinally as a line 100 ft down runway from reference point of photoscope (see survey data).

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8.6.3 PAGE MODEL NAD-2 "089

DEV-3616

CHECKED BY

DATE

TANDING TOADS INVESTIGATION

Ţ	40	41	42	43	19	45	46	47	48	49	50	57/
L			X.7.	7	• • •	7.3	7.9	7./	40	77		9-15-60
										YES		11100
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		UMENTA	10 <u>m</u> 5	TORE !	w 2							
	2360			· · · · · · · ·	3120	2910	2660	T	2360	2/60	! <del>-</del>	2990
ļ	12975	12775			13735	13525	13275	13/35	12775	12775	-	13605
ŀ			_	-	NON-						_	NON-
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3 Location of TRODI TRODI #1 Starboard Starboard Wheel

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Landing	Mumber	5Z	53	54	55	56	25 7	58	59	60
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	on Letter									
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	mainin (LBS)	2870	2660	2470	2363	2160	_	3050	2870	270
	_	13485	13215	13085	12.375	12175		13665	13485	1331
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Mirror	Angle (UEL)							1-7		
Wind (A	TS)/D1F(DAT	222						200		
		69			<b></b>			75 -		
Left Wh	eel Long.	42	-24		47	12		12	-18	12
Zero(2)	(FT) Lata	ZK	3 2		3 R.	1 R		1 R	<u> </u>	<u>z</u>
Rt. Who	el TD Rel to	-	-5-	-	5	3		<u> </u>		6
f	TRODI #1	11.7	12.0	-	7.7	8.6		6.8	8.9	7.0
3./·	TRODI #2	13.3			119	10.8	' <del>-</del>	2.4	<del></del>	11.1
Fuel Rem Gross We Runsey S Mirror A Wind (KT Ambient Left Wher T.D. Rel Zeroc 4/23 Rt. Whee Speed FT/SEC Horis. Speed KTS	TRODI#3	115	11. 2	<u></u>	i _	95	-	14	•	9.1
	TRODI #4.	11.0	117		11.2	92	<u> </u>	7.3	10.4	9.4
,	Mitchell Laft Wheel	117 3.7	12.2	]	12.7	10.5	ا سیست شر	8.7	11.2	9.6
	Mitchell Hight Wheel	11.9	12.2/3		12 1 13.3	105-11-1		8789	11.2	9.6 11.
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	SODI	1294	128.3	127.9	-	126 3	· · –	129.0	127.3	
· ·		133,121,1	1281	1247	1=0 7 3 3	T , ' *	<del> </del>	128:17	25.5	1268
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Fuel remaining read on down wind leg. 75 LES (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

Zero defined laterally as f of runway and longitudinally as a line 100 ft down runway from reference point of photoscope (see survey data).

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PAGE 8.6.4 MODEL NAD-2 "089

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3 Location of TRODI TRODI #1 Starboard Fud Starboard Wheel

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Landing	Munber	69	75	71	72	73	74	75	76	77
Date		9-15-60				9-30-60				
Satisfa	ctory		YES							
Conditi	on Letter		D							
Conflgu	ration						- INST	RUMENT	ATION	STORE
Fuel Re	maining (LBS)	2360	2760	2160	_	2910	2750	2470	2160	_
Gross W	eight (IBS)	12975	12875	12775	_	13525	13365	13085	12775	_
Runyay	Surface	CONCRETE			_	NON-				
Mirror	Angle (DEG)	4/2-				31/4-				
Wind (K	TS)/Dir. (Dec	4-7200-				0				4 135
	Temp °F	75 —				73			<u> </u>	76-
Left. Who		33	33	40	_	-82	3	25	-40	-61
Zero(2)	i to late	13 6	12 L	14 1		2 R	2 4	0	4 R	2 R
Rt. Whe	al TD Rel to	Z	0.5	_	-	2	- 0.5	۰	-2	-
	TRODI #1	12.3	14.7	-		_	7.5	ヺ゚゚゚゚	10.0	_
3	TRODI #2	14.8	150	16.8	_	_	12	11.3	-	-
Sink \	TRODI #3	116	14.5	14.3	-	65	67	8.5	1.5	-
Sink Speed		12.5	14.0	14.5	_	-	5.3	6.5	-	_
22, 220	TRODI #/ Mitchell Left Wheel	14.1 150	16.3/55	7	-		سيسرر		Let	
	Mitchell Right Wheel	14.1	16.3/55	18:450	7			7 / _		
	Photoscope Wheal	······································	14.6	, n-1-		<del>*</del> • • • • • • • • • • • • • • • • •	<del>-</del>	<b>.</b>		<del>*</del>
Horis.	SPN-12	-		_	-	126		129	124	124
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Fuel remaining read on down wind leg. 75 LuS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

Zero defined laterally as & of runway and longitudinally as a line 100 ft down runway from reference point of photoscope (see survey data).

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8.6.5 MODEL ALD-2 "089

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LANDING LOADS INVESTIGATION TITLE

REPORT NO DEU 3616

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25	13365	13085	12775		13665	13525	13275	13085	12775	13665	13445	13175
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_	6.7	8.5	1.5	<u> </u>	*	<u>ء</u> ج	7.5	8.7	75	8.5	100	12.0
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Lending	Musber	86	87	88	89	90	91	92	93	94
Date		9-30-60	10-4-60	-					,	
Satisfa	ctory								YES	
Conditi	on Letter								Н	
Configu		<b></b>					TN	STRUM	ENTATIO	N 57
_	caining (LBS)	2260	3/20	2910	2750	2530	23,0	3120	2990	2830
Gross W	eight (LBS)	12875	13735	13525	13365	13145	12925	13735	1300-	1344
Runway		NON-								
•	Angle (DEG)	3/2-						4/2-		
Wind (K	TS)/Dir. (DFT)	4 /35	6-13 40				-	4775		
Ambient	Temp OF	76	6Z		<u> </u>		-	65 -		
Left Wh	eel lane	-19	-2 <b>4</b>	5	7	-72	-10	-40	-17	-30
Zero 2	i to (FT) Lata	5 R	<u>i</u> i R	1 R	2 12	1 12	18	0	0	1 13
Rt. Whe	el TD Rel to	2,\$	0	7	0.5	5	25	1.5	0.5	1.5
	TRODI #1	12.3	8 .Z	11.5	122	8.7	130	140	150	16.0
3/	TRODI #2	-	-	/Z.o	12.5	-	14.0	_	17.0	_
Sink \	TRODI#3	12.0	-	103	103	-	_			_
Speed \ FT/SEC		10.7	5.4	9.4	7.6	-	10.9		12.5	_
,	TRODI #/. Mitchell Left Wheel		9.1	11/1/1	13.3		1144		16 2 74	167
	Mitchell Right Wheel		21-		12 3 /3.6		114/24		162 74	16 7
	Photoscope The Model	-			Г	-    - 			15.3	
Horis.	SPN-12	127	112	-		-			] -	-
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Zero defined laterally as 5 of runway and longitudinally as a line 100 ft down runway from reference point of photoscope (see survey data).

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MODEL 440-2 "089

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TITLE LANDING LOADS INVESTIGATION

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>	2310	ì	2990	2830	2660	2470	2260	3050	2910	2750	2570	2360	
5	12925	13735	13005	13445	13275	13085	12875	13665	13525	13365	13185	12975	
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	-10	-40	-17	-30	- 8	6	-24	55	-24	-25	-35	-7	
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	/3 >	14.0	150	16.3	155	16.5	165	120	12.5	10.7	130	10.7	
ļ	14.0	_	17.0		165	18.0		10.1		_		114	
	-	-	_	_	13.9	15.3	<del>-</del>	•	*	·		-	
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ed laterally as f of runway and ally as a line 100 ft down runway ence point of photoscope (see survey

(3) Location of TRODI TRODI #1 Starboard Fud Aft Port Wheel Port Starboard Wheel

ราการ (ค.ศ. 19<del>14) โดย สมเสริง</del> (ค.ศ. 1914)

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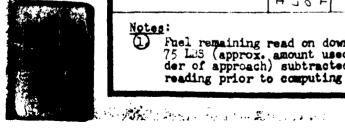
TITLE

Landing	Mamber	103	104	105	106	107	108	109	110	111
Date		10-4-60							10-6-60	
Satisfa	ctory			<b></b>						
Conditi	on Letter									
Configu	ration					<b></b>		TN:	TRUME	UTRIIG
Fuel Re	(LBS)	2160	3120	2990	2850	2660	2470	2160	2990	2750
Gross W	eight (LBS)	12775	13735	13605	13445	13275	13085	12775	13605	13365
Runway	Surface	NOW-SKID								
Mirror	Angla (DEG)	3/2-							33/4-	
Wind (K	rs)/Dir. (DFC	0.390							10235	
Ambient	Temp °F	70	71	7/	68				73 -	
Left Wh	eel long	-23	- 9	-47		-27	7	8	- 32	3 ذ -
Zero 2	l. to	2 R	4 R	. 1.R	3 R	6 R	5 R	0	4 R	18
Rt. Ma	al TD Rel to	a,	45	4	2	4.5	10	4	7	- 0.5
	TRODI #1	121	12.0	13.1	103	11.3	13.4	9.4	-	
3.	TRODI #2	~	13.3	-	12.7	_	129	9.4		-
Sink \	TRODI#3	-	-		-	-	9.0	7.8	-	<b>-</b> '
Speed PT/SEC	TRODI #1	10.0	9.9		7.1	8.4	8.2	6.8	6.4	7.7
	Mitchell Left Wheel	13.3 149	12.9 12.6		10.9 10.7	113,09	13:12.6	10.30.3	- 11.2	10.1
	Mitchell Right Wheel	133,49	129 12.6	- \	10,9 127	113-10.9		103/03	- 11.2	10.1
	Protoscope				I		Ī			
Horiz.	SPN-12	-	_	-		-	-	_	110.5	114,0
Speed	SODI	1206	112.7	1116	112.9		_	110.9	-	
KTS	Mitchell	1134,176	1120.1	1296	110 1111	107373	113.1	1087	11 162	113.918.4
	Photoscops							1		
			LEFT	TIPE	Desce	210 13				CRETE
		r 2 1/2	,	///	1 X-X 12 23	210 73	!	h 1		45
		7 14			1	4 3		<b>!</b> :		, 10 J
Rema	rks	11 2 2			†	F 3	1	;		\$ 0
		1.62 1.62 5.78 1.5178			<u> </u>	FEET CPIN	1			i •
		1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5			} #	יו אין	F	1		WINEEL
		7. 2. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.			ļ	7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5 7.5	1	; 		WHEE
		AL (. S WHEEL A. J. TET.) TAR			ļ 1	MAREL S CONCRETE	1	!		3 3
		TN ITIAL (IN LEFT WHEEL ON PAINTEN THEN THR			!	Thirmac LEFT W ON CON		<u> </u>		<b>+</b> =
		F- NH 				HALTA LEFT ON C	1		ļ	LEFT
		400	L		İ	14 7 2	<u> </u>	1	L	7 2

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5 LZ1

FORM 25 5 8



Notes: Fuel remaining read on down wind leg. 75 L3S (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

Zero defined laterally as & of runway and longitudinally as a line 100 Pt down runway from reference point of photoscope (see survey data).

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TESTING

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PAGE 8.6.7

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MODEL 44D-2 "089

THE LANDING LOADS INVESTIGATION

Manufacture of the second of t

REPORT NO DEU- 3616

7	108	109	110	111	112	113	114	115	116	117	118	119
			10-6-60								-	10-11-60
		<u> </u>				YES	YES			YES		
						E	G			G		
		IN:	TRUME	WTATIO	1 57	DRE Q	£-					
0	2470	2160	2990	2750	2470	2260	3050	2995	2660	2470	2260	2660
75	13085	12775	13605	13365	13085	12875	13665	13605	13 275		12875	
			33/4-				5 -					3 3/4
			10 235		<u>'</u>							6-10-250
		<b>-</b>	73 —			-	76					83
7	7	8	- 32	<u>ڌ</u> -	-14	-7	- 8	27	0	8	/3	3
R	5 R		4 R	1R	3 R	0	5 R	3 R	4 R	ZR	18	4 R
5	10	4	7	- 0.5	4	3.5	0	Z	4.5	2	4	0
<u> </u>	13.4	9.4	-	ļ. <u> </u>	 		160	13.5	17.0	14.5	16.5	102
1	129	9.4	_		-	<del>-</del>	16.5	150	17.0	15.0	17.0	11.0
<del></del>	9.0	7.8	_		12.4	10.7	15.7	12.3	15 2	13.2	15.6	8.8
	8.2	6.8	6.4	7.7	12,6	11.2	148	13.4	16.3		15.3	9.9
	13.12.6	10 3	- 1/2	101	135,41	144	18.675		19.0	168	185/85	
5.9	13.1.12.6	10.3	11.2	- 10.1	135147	144133	18675	15.0 15.5	190 18.0	16.216.8	18.5 18.5	
<del></del>			Í			11.9	15.8			15.8		
+			110.5	1140	107	1/3	110	109	110	129	110	_
	! بور رسي :	110.9		-			-		_		-	_
7.3	1/3:1	1087	113/162	113 9184	119 111.1	114 113.6	113.6	127.601	113.1	110112.1	11-112.6	-
						1/3.1	1/0.3			110.1		
131				CRETE			3	3		25		
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1				AG .	:	3 3 VW	100 mm	3 8		600		į
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5				-		<u>}</u>	7 7 %	356 1		2		
,				LEFT RIGHT	,	IK K	'U' '	<b>1</b> 1		RUNKAY	ſ	
5				Υ		3	Round PIGA ULD	S. S.		\$		

ned laterally as & of runway and nally as a line 100 Pt down runway runce point of photoscope (see survey

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3 Location of TRODI
TRODI #1 Starboard Fud Port W

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will be survey with the

	haber	120	121	127	123	124	125	126	127	128
Date		10-11-60		<del> </del>	<del> </del>	<b></b>				
Satisfa	ctory	YES	YES				YES	YES		
Conditi	on letter	E	<u> </u>		ļ			A		
Conflgu	ration	4						INSTA	PUMENT	ATION
Fuel Re	maining (LBS)	2470	2760		2120	2993	2830	2860	2360	1
Gross W	eight (LBS)	13085	——————————————————————————————————————		13735	13605	13445	13275	12975	7
Rumay	Surface	NON.	NOM-	CONCRETE						
Mirror	Angle (DFG)	33/4	33/4	<u> </u>						
Wind (K	TS)/Dir. (DEC	6-13	6-10 250							
Ambient	Temp OF	83	83	85 -				!		
Left Wh	eel Ione	2	63	-4	3	2	3	9	11	5
T.D. Re. Zero(2)	(FT) Lata	1 +	4 R	144	166	16 L	14 6	16 2	156	13 4
INDICATE!	al TD Rel to	75	0	1.5	3	-	3	1.5	7	1.5
	TRODI #1	12.5	14.5	-	i	14,0	14.5	17.0	14.3	14.0
3	TRODI #2	12.5	_	14.1	11.5	14.5	152	_	15,2	14.7
Sink \	TRODI #3	105	_	13.5	117	12.7	12.8	_	-	-
Speed   FT/SEC	TRODI #4	11.6	13.4	15.0	13.0	/3.2	/33	16.2	140	13.8
·	Mitchell Left Wheel								- 1 . 1	
	Mitchell Right Wheel				Wo +	TITCHE		17A -		
	Photoscope	12.2	12.5		10.7		13.9	15.5		13.4
Horiz.	SPN-12			-	-		-	-	_	-
Speed	SODI	-	104.6	106.2	114.2	-	1134	1140	127.5	/28.4
KTS	Mitchell	•				IPCHE		TA		1 = 0 .
	Photoscope	110.7	125.1		113.9		113.3	110.7		109.1
Remar		(coul)	0.57 (cor)		510PE: 0.40 (10NE)		5.00 2 ( tous)			Slope: 0.4° (LOUE)
		Round	County		RUNWAY		Y WWW.		- marif	Romeray

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The remaining read on down wind leg.
75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

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Zero defined laterally as f of runway and longitudinally as a line 100 ft down runway from reference point of photoscope (see survey data).

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PAGE 8, 6, 8 MODEL MAD-2 "089

REPORT NO DEV- 3616

DATE

LANDING LOADS INVESTIGATION

			T1	TLE MAI	INTIME TOWN	W 11111	WW TTON				REPORT	NO DEV-	361
_	125	126	127	128	129	130	131	132	123	134	135	136	
					10-12-60								-
	YES	YES					YES		YES				
	ے	A					F		F				
		INSTA	PUMENT	ATION	STORE	on & -							
ن	2 ¥ 30	2860	2360	1	3120	2990	2750	2570	2360	2160	7663	2470	8.
05	13445	13275		12715	1 ' 1		·	•	12975			† · · · · · · · · · · · · · · · · · · ·	+
				<b>——</b>	NON- SKID							>	
					31/2-							-	-
					6						6-3	6-8-3	
					70						72		-
	3	9	1/	5	6	-6	19	.19	20			72	
	14 6	16 2	156	13 6	0					/6	-33	59	-
4	3	1.5	<u>, 73 E</u> 7	1.5	.75	بر <u>ا</u> 2.5	1 2	24	18	0	<u> </u>	1 R	
	14.5	17.0	14.3	140			0.5	0.5	0	3.5		3	$\vdash$
-				14.7	11.5	13.0	11.5	// 3	17 3	7.0	12.4	<del> </del>	-
-	152		15.2	17.7	/3.0	15.0	12.5	130	140	10.1			
_	128		<del>-</del>			11.8		1/0	11.4	7.9	-	-	
	/3.3	16.2	140	13.8	11.1	12.5	10.8	<del>-</del>	119	84	125	-	
1	DA	77A -					100/23	12 3 12.3	13 8 43	10-104		12.8	
: +						2	10 8 12.3	15 3 133	13.0,43	10.8 10.4	<u> </u>	12812.4	
	13.9	15.5		13.4			12.0		125				
				· <del></del>		<b></b>		_	-		_	-	
	1134	1140	1275	128.6	127.0	128.5	124.5		-		_	110.2	
45	L DA	TA					128/27.0	132129.4	132/3/4	111.6	1053	1050	
	113,2	110.7		109.1			1279		128.5				
	_			· (C)			とっまさ		3- 1	i			$\Box$
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	3 6			33			0 7 0 7		3003				
İ	, i			0.0			1,400 mg x	1	F. 7 F. 3				
;	6. C				:				10 7 7				
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	27	-		Store			51.28 S. 58.00		K K				
i	<u>ک</u>			:			1 4 4 A Y		\$ 3 X		'		
	KUNDY			Romman			RUILWAY ILLITIAL SHIP SKIP		RUNUMY INTO RIENT ON		4		
	<i>f</i> ,			K			C H3		& HOO				

ned laterally as G of runway and hally as a line 100 ft down runway rence point of photescope (see survey

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(3) Location of TRODI TRODI 11 Starboard

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FITLE LAN

Landing	Musber	137	138	139	140	141	142	143	199	145
Date		10-12-60	10-22-60							
Satisfa	ctory		·							
Conditi	on Letter							`		
	modition Letter enfiguration  mel Remaining (LBS)  may Surface  more Angle (DEG)  and (KTS)/Dir. (DEG  bient Temp of  oft Wheel  D. Bel.  TRODI #1  TRODI #2  TRODI #2	& STORE					71/0 -	150 6	CHON E	100
Fuel Re	maining (LBS)	2160	1560	1450	1330	1160	1660	1500	1450	1280
Gross W	eight (LBS)	12775	14475	14365	14245	14075	14575	14415	14365	1419:
		NOW-SKID	CONCRETE							
	Angle (DEG)	31/2	33/4	3 3/4	33/4	3	3	3	3	31/4
Mind (K	TS)/Dir. (DEC	6-8	0.5 45	0-345	0-5/5	517 45	5.1345-			
Ambient	Temp OF	72	59	59	59	63 -				
Left Wh	cel Tama	-27	-39	40	- 36	-75	-120	-42	-48	-/
T.D. Re	(FT) Lat.	2 R	19 6	176	214	12 6	146	12 6	146	12
INDICATE:	CEFF FIRST	3	0	15	/	3	-6	4	0.5	/
	LC.	10.0	11.8		i0 <b>5</b>	9.8	_	11.0	8.5	9.9
a		10.7	~	-	11.9	-	-	-	•	11.6
31n <b>k</b> \		11.1	-	<b>-</b>	_	_	_	11.5	-	10.2
Speed \		-		-	-	-	_	-	_	10.3
11/UEUU	Mitchell	11.3		7-1-					3,000	12.5
		11.3		~				-,		125
		- 12,6			- f T			<u>-</u>	·	
U a sel a		_	135	142	120	139	, 27	135	, 2 2	/32
		107.4	132.4	139.9	135 132.1	1381	/37	/	133	
Speed	SODI	1087			136.7	139.5	137.2	1321 2	131.6	133.
KTS	Mitchell	109.2			<del></del>	1.141.0	137.2	132 132 8	136.0	134
P	Photoscope	lu a						<del></del>	1	
Roma	rks	LEFT KIMEGE. DOINTED CONCRETE RIGHT WINGEL. KIDN- SKID		No INSTRUMENTATION	ENSRIMEN TUTON 'OU' AFTER Emire T			-		

Notes:

Fuel remaining read on down wind leg.
75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

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Zero defined laterally as & of runway and longitudinally as a line 100 ft down runway from reference point of photoscope (see survey data).

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CHECKED BY

TESTING \_\_

DIVISION

PAGE 8.6.9

MODEL MAD-2 "089

REPORT NO DEV 3616

TITLE LANDING LOADS INVESTIGATION

	192	143	199	145	146	147	148	199	150	151	152	153
												-
			ļ ———		YES	<del></del>			YES	YES	YES	YES
	=2.4	15772111	IEN THY	100	I	240 6	- 20		J	I	K	J
	72/0 =	150 61	ACCON E	T. TANK	A (Ener	770-5)	ON WIA	16 RA	K			
-	1660	1500	1450	1280	1040	1660	1450	1390	1220	980	2070	1500
5	14575	14415	14365	14195	13955	14575	14369	14305	14135	13895	14985	14415
												-
	3	3	3	3/4 -		ـــــــــــــــــــــــــــــــــــــ						
5	5-13-15					0.4 90				0-690	0-	٥٠
_			<u> </u>			60 -			<u></u>			
	-120	-42	- <b>4</b> 8	-/	-37	-52	-40	-18	-20	- Z S	-17	-43
4	146	12 4	146	12 4	15 6	106	156	114	146	146	134	14 6
1	-6	4	0.5	/	-/	/	-4	5-	-/	-0.5	-0.5	-/
	_	11.0	3.5_	9.9	8.5	10.0	9.2	11.8	120	8.7	16.0	12.0
	_			11.6		-	-	, 	' 		-	
	_	11.5		10.2	8.6	10.5	10.4	10.7	13.5	9.6	16.4	~
	_		_	10.3	9.4	_	_	_	· •	-	15.6	130
				12.5				130	145	11.7-	18.3	
				12.5	- :	-		13.0	14.5	11.7	18.2	
					9.4	-	 !	!	12.0	10.1	16.9	13.9
1	137	135	133	132	133	135	135	136	134	135	137	135
- <del>-  </del>	-	-	131.6	133.0	132.0	_	132.9	i -	132.9	Ī	_	/33,3
1.0	137.2	132 123	132 328	133 5343	13574.3	136.4.12	1343	134.35.7	131.452.1	134.3	136.4	136 138.7
		process and regular seconds.	120		133.4		<b>.</b>	1	133.8	134.4	136.3	134.4
				<del> </del>			<del></del>	<u> </u>			3 3	
		•	<b>†</b>		3-		f	† :	(count)	9.5.6 A T	1 2 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	3
			•	•	2007	! !	) } (	-	13	300	(cons) (cn) 7 x/s	3 4
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:					4.0		•	1	100		00 8 3	00
i				;	510PC. 3.4" (4			1	3000E10.0	26 Jan	SCORTIONS ON R WINECK H AFTER TS.	St. per: 0.1'
}		•	1				1		1	}	1	オ
1		# 4 1			Rumar		1		RUNWAY	ROHUMAY	RULLARY LEFT,	744
			1		3				30	25	Russa 1 FEE 7	Ruumay

ed laterally as f of runway and ally as a line 100 Pt down runway ence point of photoscope (see survey

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(3) Location of TRODI
TRODI 11 Starboard Fud Port Wheel
(2) Port Fud Starboard Wheel

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The same of the sa

				<del></del>						
Lending	Mumber	154	155	156	157	158	159	160	161	162
Date		10-22-60			10-25-61				10-76-61	
Satisfa	ctory		YES			· · · · · · · · · · · · · · · · · · ·		L		
Condition	on Letter	INSTR	K		7.	· · ·	<del></del>			
Configu	ration		KLUN TUNKS	FULLY ON ELING	Z-150 GA	e store Klaw Tahir	7 (EMB)	Y) OU WINE		
Fuel Re	maining (LBS)	1450	1280	1040	2750	2570	2210	1980	2990	2840
Gross W	eight (LBS)	14365	14145	13955	13655	13475	13115	12385	13615	13365
Runyay	Surface	CONCRETE			CONCRETE					
Mirror	Angle (DEG)	4/4	41/4	4/4	3/2-					
Wind (K	TS)/Dir. (DFC	2			3-12-				0	
Ambient	Temp °F	60-			59 -				62-	
Left Who	eel Tong	9	-19	-3	-53	-54	-46	- 3 <i>8</i>	64	-
T.D. Re. Zero(2)	(FT) Lata	10 6	114	13 4	14 L	116	106	106	18 4	-
+INDICATES	el TD Rel to	/	1.5	2	-9	-10	- 9	-4	-12	
7	TRODI #1	145	14.5	10.9	73	9.2	10.0	9.7	-	12.0
3	TRODI #2	17.0	16.1	12.2	-	_			-	14.0
Sink \	TRODI #3	16.0	145	11.0			_	_	8.3	_
Speed FT/SEC	TRODI #4	15.5	14.5	10.5	-	-	_	-	8.2	11.5
,	Mitchell Left Wheel	16.9	170	121.			~11			
	Mitchell Right Theel	169	120	12:1 -			No.	THITCH	ECC D	HTA -
Ì	Photoscope		14.8							
Horis.	SPN-12	131	/33	/33	115	118	115	119	_	125.0
Speed	SODI	1274	131.1	13/1	110.9	1/3.3	112.9	111.3	121.6	122.8
KTS	Mitchell	130/30.1	134.3	13/4			-No	MITCHE		
			133.5					7.3.1		
	Remarks				mee '					
•			5.75 1.76		<b>E</b> '			:		
_			33		S. C. Die					
Remai			0.00 %		`		!		}	
**			ان		11861			İ		
4.	**		603							
Cont.			X		026			1		
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Fuel remaining read on down wind leg. 75 LPS (approx. amount used during remainder of approach) subtracted from corrected

reading prior to computing gross weight.

Zero defined laterally as £ of runway and longitudinally as a line 100 ft down runway from reference point of photoscope (see survey data).

Marie Marie

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TESTING

DIVISION

PAGE 8.6.10

MODEL 440-2 "089

LANDING LOADS INVESTIGATION

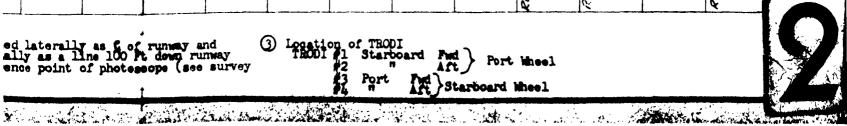
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REPORT NO DEV-3616

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A Starboard Wheel



									71	TLF LAN
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Configu					ļ		ーエル	STRUM	ENTATIO	N 500
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FT/SEC	TRODI #4	11.3	9.5	110	ان 3. ا	7.3	10.6	9.9	13,4	13.8
•	Mitchell Left Wheel			<i>7</i> /-	14.4 16 3	13.7,23		15/36		18.5,79
	Mitchell Night Wheel	أ أ	<i>-</i> _		14.4 16.3	13.7/23		15.1/36		18.5 17.9
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75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

**③** 

Zero defined laterally as a of runway and longitudinally as a line 100 ft down runway from reference point of photoscope (see survey data).

PREPARED BY

CHECKED BY

TESTING

THE CONTROL OF THE PROPERTY OF

DIVISION

AGE 8.6.11

MODEL ALD-2 "089

DATE: ....

TITLE LANDING LOADS INVESTIGATION

REPORT NO DEV-36/6

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3 Location of TRODI
TRODI 1 Starboard Fwd Aft Port Wheel

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Landing	Mumber	188	189	190	191	192	193	194	195	196	7
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Fuel remaining read on down wind leg. 75 LBS (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

Zero defined laterally as 6 of runway and longitudinally as a line 100 to deep runway from reference point of photoscope (see survey) date - AS THE CABLE (-70 CABLE)

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Market Conservation and Conservation of the Co

PREPARED BY CHECKED BY

TESTING

DIVISION

A DESCRIPTION OF THE PROPERTY

PAGE 8.6./2 MODEL NAD-2 \*089

DATE:

TITLE LANDING LOADS INVESTIGATION

REPORT NO DEV- 3616

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(3) Location of TRODI
TRODI 11 Starboard Fud Port Wheel
12 Port Aft Starboard Wheel

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TITLE LANDIN

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Landing Maber		205	206	207	208	709					
Date		11-1-60				-					
Satisfactory											
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Fuel Remainin (LBS)		2750	2570	2360	2160	2070					
Gross Weight (LBS)		13375	13195	12985	T -	12695					
Runway Surface		CONCRET				<b></b>		-			
Mirror Angle (DEG)		43/4-				-					
Wind (KTS)/Dir. (DFC						-					
•	Ambient Temp OF					-	<u> </u>				
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Sink	TRODI #2	77.0	156	1 / 2	<del> </del>	76.7			†		<del>†</del>
Speed	TRODI #3				!						<del> </del> -
FT/SEC	TRODI #1	12.5	19.3.89		5.15	17.3-16.3		+	<del>                                     </del>		
	Laft Wheel	10.1			1	17.3		1		<u> </u>	+
	Mitchell Right Wheel	12.313.9	183			173-16.3				 	
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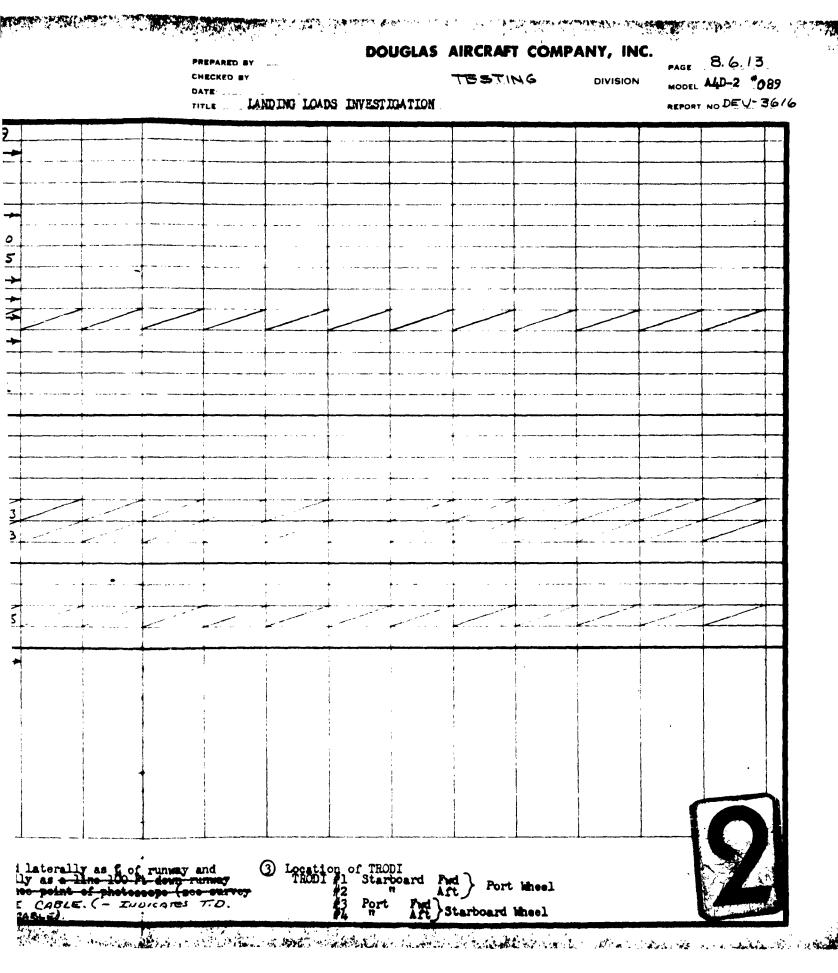
Notes:

Fuel remaining read on down wind leg. 75 LES (approx. amount used during remainder of approach) subtracted from corrected reading prior to computing gross weight.

Zero defined laterally as & of runway and longitudinally as a line 100 H down runway from reference point of photocope (see enroy data). THE CABLE. (- INDICATES T.D. PRIOR TO CABLE).

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PAGE: 8.7.1 DOUGLAS AIRCRAFT COMPANY, INC. MODEL: A4D-Z TESTING REPORT NO .: DEV-3616 134 1,1

FORM 25 BF	PREPARED BY:	DOUGLAS AIRCRAFT	COMPANY, INC.	PAGE: 8.7.2
(REV. 3.04)	CHECKED BY:	The state of the s	DIVISION	MODEL: A4D-Z
	TITLE.			REPORT NO. DEV-3616
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PAGE: 8.7.3 DOUGLAS AIRCRAFT COMPANY, INC. FORM 25 BP PREPARED BY:, (REV. 3-54) CHECKED BY .... MODEL: AGD-2 DIVISION REPORT NO .: DE V-3616 / ); .:!.

DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8.7.4 PREPARED BY:\_ CHECKED BY: \_\_\_\_ MODEL \_ A.40-2 REPORT NO .: DEV- 36/6 2359 840/5 PANDING NO PIGHT 100 Ή 30 08

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FORM 25 BP

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DOUGLAS AIRCRAFT COMPANY, INC. PREPARED BY:\_ PAGE: 8.75 MODEL: AAD-2 DIVISION REPORT NO.: <u>DEV-3</u>6/6 WHERE SPEED LANDING NO 95 133 7

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DOUGLAS AIRCRAFT COMPANY, INC. PAGE 8.7.6 PREPARED BY: .... FORM 25 DP REV. 3-54: CHECKED BY:\_\_\_\_\_ REPORT NO .: LEV-3616 VELOCITY LANDING 113 #: 133

DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8.7.7 FORM 25 6P ( REV. 3-54) CHECKED BY: .. MODEL: A4D-2 "089 DIVISION PEPORT NO .: DEV-36/6 J

131

DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8.7.9 MODEL: A4D-Z DIVISION REPORT NO .: DEV - 36/6 WHEEK VELOCITY

ASE ALBANCHE 1954

MODEL: 140-2 (REV. 3.84) CHECKED BY .... \_DIVISION REPORT NO.: DEV-3616 KANDUNG 181 4 801

DOUGLAS AIRCRAFT COMPANY, INC.

PREPARED BY: \_ .

FORM 25 BP

PAGE: 8.7.10

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DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8.7.// PREPARED BY . FORM 25 BP (REV. J.54) MODEL: A4D-2 CHECKED BY:\_\_\_\_ REPORT NO .: DEV-3616 LANDING No. 133 WHEEL VELOCITY LEFT -... 77ME - 544

DOUGLAS AIRCRAFT COMPANY, INC. PREPARED BY: PAGE: 8. 7.12 MODEL: PAD-Z DIVISION REPORT NO.: DEV-36/6 WHEEL VELOCITY

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DOUGLAS AIRCRAFT COMPANY, INC. PREPARED BY .... PAGE: 8.7.13 MODEL: A44-2 DIVISION REPORT NO. LEV :616 2356 END WEEL WELDCITY CANDING NO 150 771

DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8.7.14 FORM 25 BP PREPARED BY: (REV. 3-34 A40-2 REPORT NO.: DEV- 3616 LANDING WO. RIGHT WHIEL PERT WAVEEL 07

DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8.7.15 PREPARED BY:\_\_ . .... MODEL: \_ A40-2 REPORT NO .: DEV. 3616 VELOCITY 14 11, 4 09 07

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FORM 25 BP

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DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8.7.16 MODEL: A4D-2 REPORT NO. DEV- 3616 -1: 601 06

DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8.7.17 PREPARED BY: B.D. FORM 25 85 (REV. 3-84) CHECKED BY ..... MODEL: A40-2 REPORT NO .: DEV - 36/6 A WHEEL VELOCITY VELOCITY -RIGHT WHEE 051

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DOUGLAS AIRCRAFT COMPANY, INC. PACE 8.7.18 PREPARED BY: B.D FORM 25 83 (REV. 3-84) CHECKED BY MODEL: AQD-2 DIVISION DATE: \_\_ 7-31-62\_\_\_\_\_ REPORT NO .: DEV-3616 `\ WHEEL VELOCITY LANDING No. 128 +RAD/SEC ALBANENE 1881. 151 IME HEEL

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PREPARED BY	DOUGLAS AIKCRAPI COMPANY, INC.	PAGE 8.8.1
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DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 5.8.2 PREPARED BY: \_\_\_\_ FORM 25 B6 CHECKED BY: MODEL A4D-Z (REV. 3 54) REMORT NO .: DEU-3616 7.8 126 :# ::: V

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DOUGLAS AIRCRAFT COMPANY, INC. 8.8.3 MODEL: A40-2 REPORT NO.1. <u>DEV-36/4</u> ALBANENE 1486. 451

PAGE: 3.3.4 DOUGLAS AIRCRAFT COMPANY, INC. PREPARED BY: FORM 25 ES CHECKED BY MODEL: A9U-2 SEV + 54 REPORT NO. DEV. 3/3/2 Û 4 1 19

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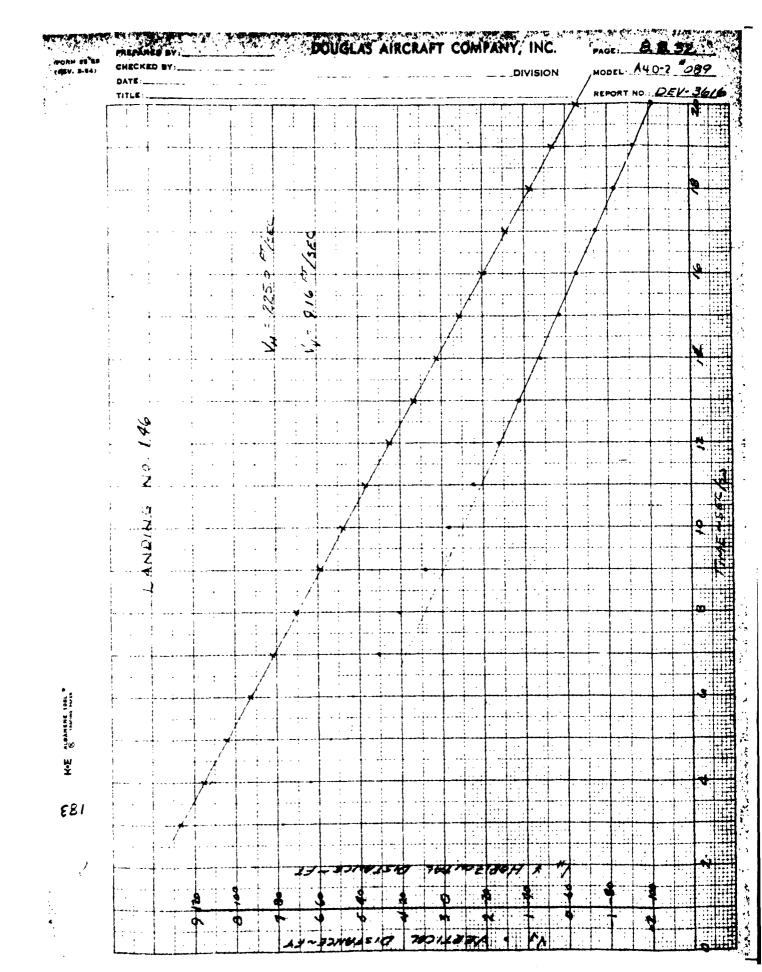
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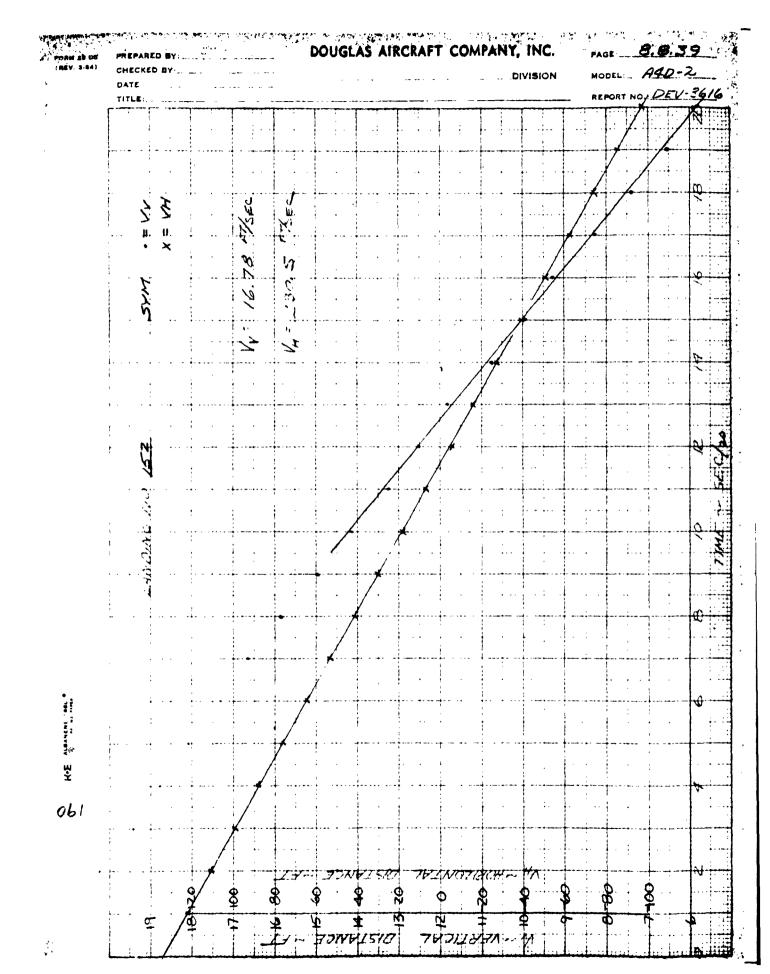
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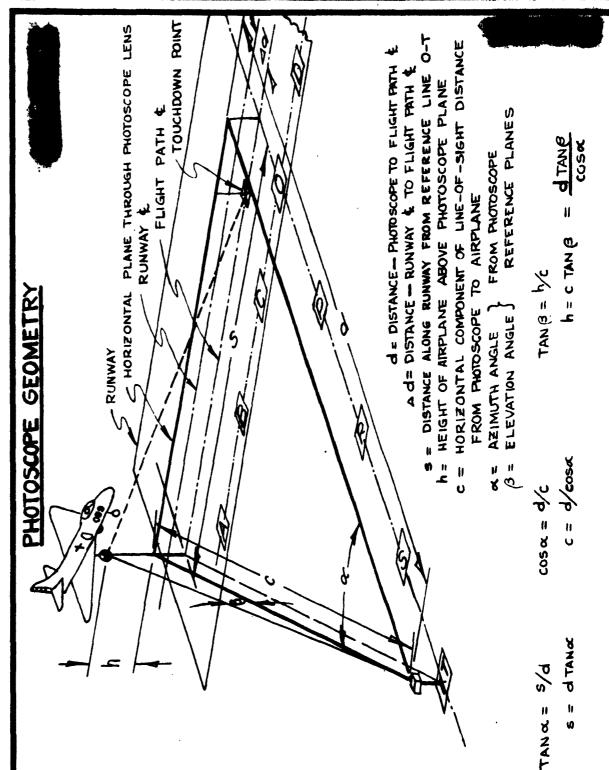
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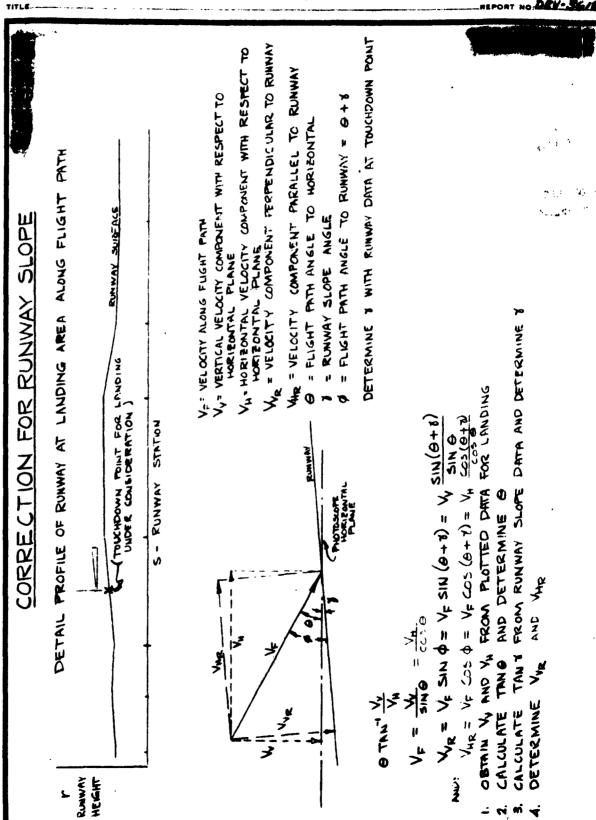
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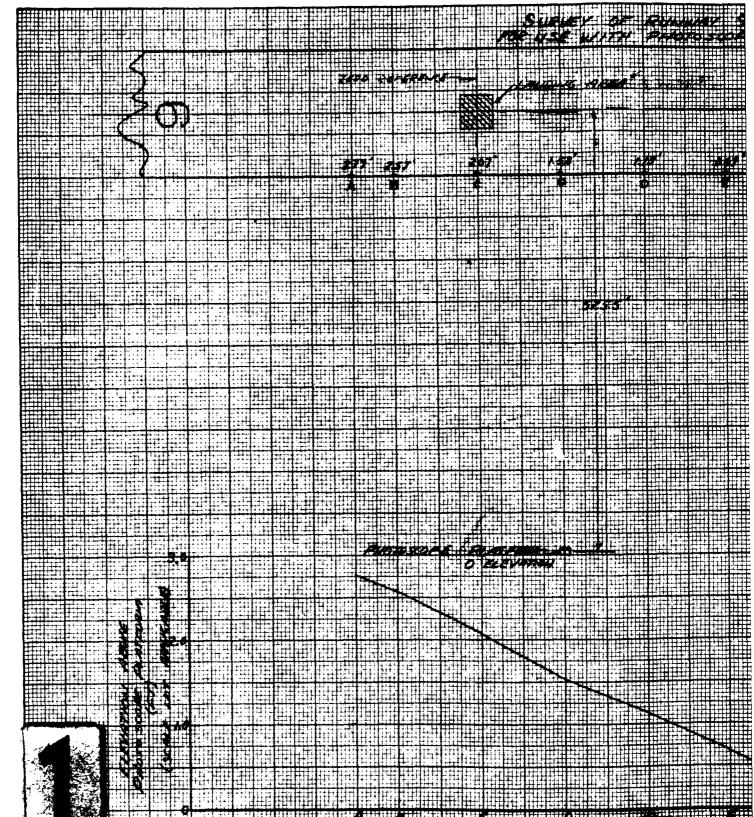
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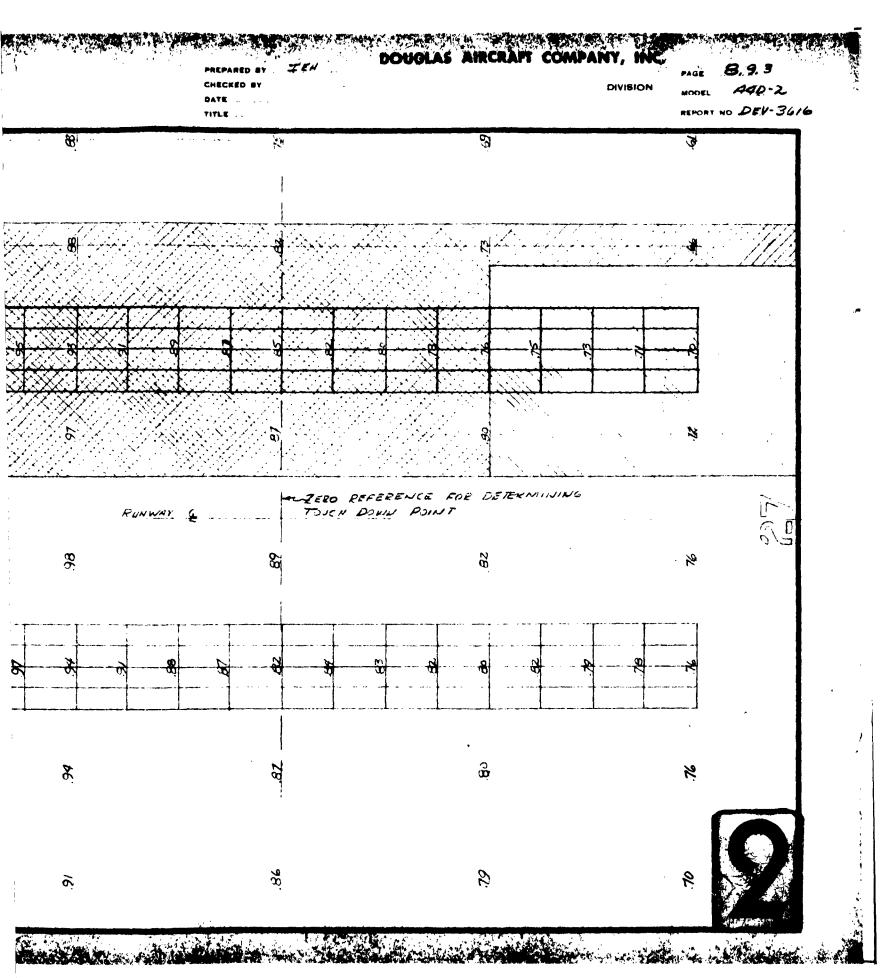
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DOUGLAS AIRCRAFT COMPANY, INC. PAGE: 8.9.2 REPORT NO.: DEU. 3616



DOUGLAS AIRCRAFT COMPANY, INC. 8.9.4 CHECKED BY DIVISION MODEL A40-2 DATE REPORT NO DEV-3616 TITLE  $\hat{x}$ -ZEKO REFERENCE FUR DETERMINING TOJENDONIN POINT 36 6

Load Condition A				Model	8.10.1 A4D-2 No.DEV-3616
Dete 9-27-6	ACTUAL WEIG	- GHT AND	HORIZOI	-	
Contract No.	"Govit.	No-	,Fact. 1	No	,Art. No
SCALE POSITION	SCALE SCAL NO HEADING	(Lbs.) TARE	SCALE SERROR	SYMBOL N	T WEIGHT
Born Left Main Wheels	9041	1	0	L¥R (	9040
Diebt Hola Hoos			t <u>i</u>		
Nose Wheel	1442	1	0 W.	T /	441
TOTAL WEIGHT	10483	2	W	1	0481
FORWARD DATUM	t=4444 HR  t=4420 HR  WITY TO FORWAR  r+t+ WT M	b=1 ) FLCOI D DATUM (HO	When Tail Down Required Property of the Proper	T AS W	ln.
ITEMS ADDED & SUE	TRACTED WEIGHT	(Lbs.) C.G	IST(In.) TO DATUM	MOMENT	GUARANTEE D
Aircraft as Weigh	ned 10.48	1 24	4.80	2565749	
Minus - See Pages	19.48	2 2 2 2	4.80	2568749	
17 TOTAL EMPTY WI	SIGHT				
BALANCE [ [	<u> </u>	129.6			to % M.A.C.
M.A.C. cale. in	accord. with H	andb'k. Se	c. II, Pa	rt II,(Ar	my)or SR-7(Nav

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## DOUGLAS AIRCRAFT COMPANY, INC.

PAGE 8.10.2 MODEL ALD 2

DIVISION

.... AIRPLANE LOADING

PREPARED BY

BuNo. 142089

... XERN NO DEV-36/6

			HOW NO DEVISOR
DESCRIPTION WEIGHT EMPTY NO FUEL	WEIGHT	H-Sta	H <b>-MOH/1</b> 000
BASIC WEIGHT	10481	244.8	2565.7
Pilot & Chute (Incls Flt Gear)	210	109.0	22.9
Engine Oil - 4 gals. (incls cooler oil)			
BALLAST		,	
LESS COMPASS CONTROL	-9.5	15.0	-0.1
	, .		
			,
	·		
GROSS WEIGHT (No Puel) 30.0 % HAC GRAR DN	10681	242.3	2588.5
Ldg Gear Mom Change (Dm to Up)			-20.8
GROSS WEIGHT (No Fuel) MAC GEAR UP			
FUELlbs./gal			
Pus. Tankgals.			
Wing Tankgals.	·		
External gals.			
CROSS WEIGHT (ENG. START) # MAC GEAR UP			
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AIRPLANE LOADING

## DOUGLAS AIRCRAFT COMPANY, INC.

BuNo. 142089

PAGE 8,10.3

DIVISION

MODEL MIDE

XXXX NO DEV-3616

H-MOM/1000 DESCRIPTION Weight Empty H-Sta WEIGHT 10481 244.8 2565.7 BASIC WEIGHT . 210 22.9 Pilot & Chute (Incle Flt Gear) 109.0 Engine Oil - 4 gals. (incls cooler oil) BALLACT \_\_\_\_ . . LESS COMPASS CONTROL **±9.5** 15.0 -0.1 -23.0 281.5 -6.5 LESS POWER SUPPLIES 281.5 9.4 ADD BATTERY PACK 33.25 242.4 2591.4 10691 GROSS WEIGHT (No Puel) 30.1 % MAC GRAR DN -20.8 Ldg Gear Mom Change (Dn to Up) GROSS WEIGHT (No Pool) % MAC GRAR UP FUEL lbs./gal Pus. Tank \_\_\_\_gals. Wing Tank \_\_\_\_\_gals. External gals. CROSS WEIGHT (ENG. START) # MAC CRAR UP

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LANDINGS: 24 through 137

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DOUGLAS AIRCRAFT COMPANY, INC.

PAGE 8.10.4

DIVISION

MODEL MD.2

... AIRPLANE LOADING

Buho. 142089

XXXXX NO DEV-36/6

DESCRIPTION WEIGHT EMPTY	WEIGHT	H-Sta	H-MOM/1000
BASIC WEIGHT	10481	244.8	2565.7
Pilot & Chute (Incle Flt Gear)	210	109.0	22,9
Engine Oil - 4 gals. (incls cooler oil)			
BALLAGT		,	
LESS POWER SUPPLIES	-23.0	281.5	-6.5
ADD BATTERY PACK	33.25	281.5	9.4
ADD EMPTY 150 GAL, TANKS AND ACCEL	280.0	246.7	69.1
ADD 300 GAL. JP-5 at 6.7 #/gml	2010.0	236.7	475.8
	•		
			,
GROSS WEIGHT (No Puel) 29.3 % MAC GEAR DE	12991	241.4	3136,4
			-20.8
Lag Gear Mom Change (Dn to Up)			10.0
GROSS WEIGHT (No Fuel) MAC GEAR UP		<b></b>	
FUELlbs./gal			
. Fus. Tankgals.			
Wing Tankgals.			,
Externalgals.			
	} <u> </u>		
CROSS WEIGHT (ENG. START) MAC GEAR UP			

550

K-E ALMANANE 14AL

DOUGLAS AIRCRAFT COMPANY, INC.

DIVISION

PAGE 8 10.5 MODEL ALD 2

.... AIRPLANE LOADING BuNo. 142089 XXXXX NO DEV-3616 H-MOM/1000 H-Sta DESCRIPTION WEIGHT EMPTY WEIGHT 244.8 BASIC WEIGHT 10481 2565.7 210 109.0 22.9 Pilot & Chute (Incle Flt Gear) Engine Oil - 4 gals. (incls cooler oil) BALLAGT LESS POWER SUPPLIES -23.0 28!.5 -6.5 ADD BATTERY PACK 33.25 281.5 8.4 ADD EMPTY 300 GAL TANKS AND ACCEL. 280.0 246.7 69.1 GROSS WEIGHT (No Fuel) 28.3 % MAC GRAR DN 10981 240.1 2636.7 -20.8Ldg Gear Hom Change (Dn to Up) GROSS WEIGHT (No Fuel) \_\_\_\_\_\_ % MAC GEAR UP FUEL \_\_\_\_lbs./gal Fus. Tank \_\_\_\_\_gals. Wing Tank \_\_\_\_gals. External \_\_\_\_gals. GROSS WEIGHT (ENG. START) # MAC GEAR UP

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LANDINGS: 157 through 160

N-E ALMANENE SASE

DIVISION

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DOUGLAS AIRCRAFT COMPANY, INC.

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... AIRPLANE LOADING

BuNo. 142089

MODEL NO DEV-3616

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DESCRIPTION WEIGHT EMPTY	WEIGHT	H-Sta	н-мон/1000
BASIC WEIGHT	10481	244.8	2565.7
Pilot & Chute (Incle Flt Gear)	210 )	109.0	22.9
Engine Oil - 4 gals. (incls ceoler oil)			
BALLACT		,	
LESS POWER SUPPLIES	-23.0	281.5	-6.5
ADD BATTERY PACK	33.25	281.5	8.4
AND BATTERT THON	33.27	201.5	0.4
		! !	
GROSS WEIGHT (No Fuel) 29.9 : 5 MAC GEAR DE	10701	242.1	2590.5
Lag Gear Hom Change (Dn to Up)			-20.8
GROSS WEIGHT (No Puel) MAC GEAR UP			
FUELlbs./gal			
Pus. Tankgals.			
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Externalgals.			
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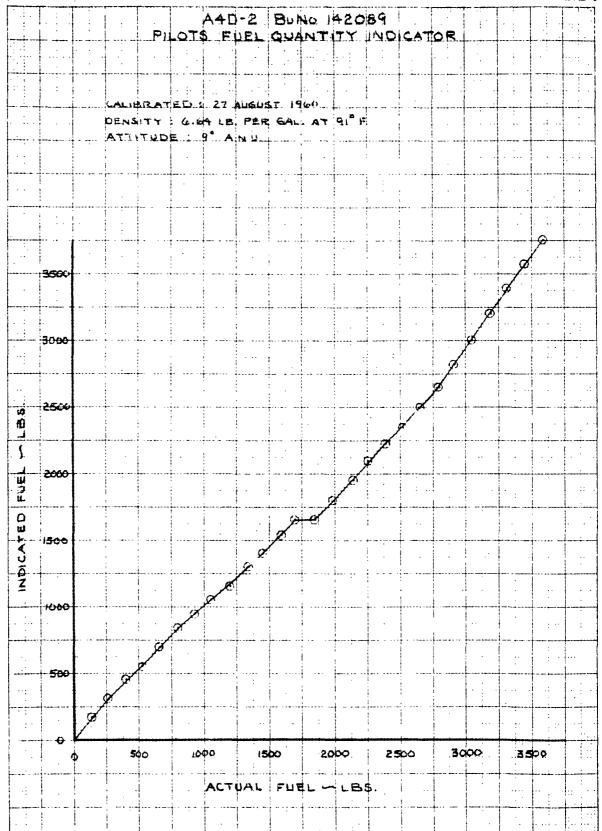
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MEPCHT NO DEV 3616 TITLE



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